

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
25 January 2001 (25.01.2001)

PCT

(10) International Publication Number  
**WO 01/06679 A1**

(51) International Patent Classification<sup>7</sup>: **H04B 7/26**

Shik; 466-1 Sharihyun-dong, Ihlsan-gu, Goyang-si, Gyeonggi-do 411-530 (KR).

(21) International Application Number: **PCT/KR00/00770**

(22) International Filing Date: **15 July 2000 (15.07.2000)**

(74) Agent: **KIM, Jong, Su**; Dasung Building, Suite 201, 735-34 Yoksam-dong, Kangnam-gu, Seoul 135-080 (KR).

(25) Filing Language: **English**

(26) Publication Language: **English**

(81) Designated States (*national*): AE, AT, AU, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, HU, ID, IL, IN, LU, MX, NO, NZ, PL, PT, RO, RU, SE, SG, TR, UA, VN, YU, ZA.

(30) Priority Data:

1999/28901	16 July 1999 (16.07.1999)	KR
1999/41041	22 September 1999 (22.09.1999)	KR
2000/5769	8 February 2000 (08.02.2000)	KR
2000/5770	8 February 2000 (08.02.2000)	KR
2000/13185	15 March 2000 (15.03.2000)	KR
2000/40564	14 July 2000 (14.07.2000)	KR

(84) Designated States (*regional*): Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

(71) Applicant: **KISE CO., LTD. [KR/KR]**; Poonglim Building, 16th floor, 823 Yoksam-1-dong, Kangnam-gu, Seoul 135-081 (KR).

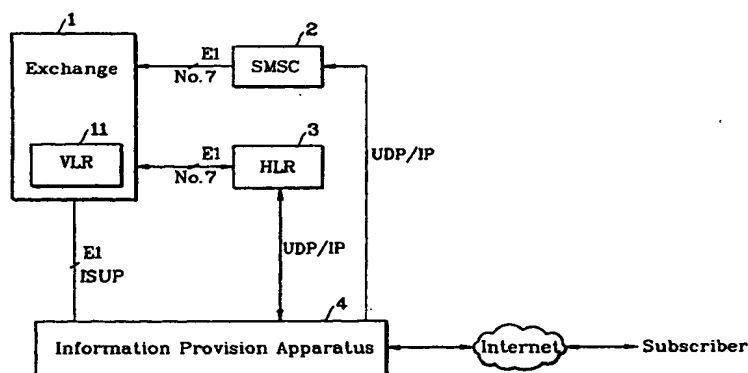
Published:

— With international search report.

(72) Inventors: **CHEY, Kyoung, Muk**; 270-75, Gae-bong-3-dong, Guro-gu, Seoul 152-093 (KR). **KIM, Do**,

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **METHOD AND SYSTEM FOR PROVIDING CUSTOMIZED INFORMATION DURING CALL SETUP PROCESS IN TELECOMMUNICATION SYSTEMS**



WO 01/06679 A1

(57) Abstract: Disclosed relates to a method and system for providing customized information to a calling subscriber during a call setup process, that is, while the subscriber is waiting for a called party's answer after making a call setup request. The invention provides an information provision apparatus (4), interconnecting with an exchange (1), for providing the realtime customized information to an originating subscriber. The apparatus (4) capable of connecting the Internet is coupled with a short message service center (2) through a predetermined closed network. The mobile subscriber can make a new subscription for the information provision service on the Internet. The subscription state is stored in a home location register (HLR) (3). If the subscriber makes a call, the exchange (1) interconnected with the apparatus (4) executes the service to the originating subscriber based on the subscription information of the HLR (3). The service is continued till a called party answers to the call. The apparatus (4) supplies access information with which the originating subscriber may obtain more detailed information additionally. The access information including a telephone number, URL, etc. is provided to the originating subscriber through the short message service center (2). The customized information which the subscriber receives can be selected by the subscriber on the Internet, or alternated according to the service subscriber's information or the subscriber's location information automatically.

METHOD AND SYSTEM FOR PROVIDING CUSTOMIZED INFORMATION  
DURING CALL SETUP PROCESS  
IN TELECOMMUNICATION SYSTEMS

Technical Field

5           The present invention relates to a telecommunication system, especially to a method and system for providing realtime customized information to a calling subscriber during a call setup process.

Background Art

10           As communication techniques have been advanced rapidly, various telecommunication systems have been used. In the past, the communication systems have been on the basis of wired communication systems using a public switched telephone network (PSTN). Recently, an integrated services digital  
15           network (ISDN) or a wireless local loop (WLL) system have been widely adapted and personal mobile communication systems have been popularized as well. Especially, the growth of the field of the personal mobile communication system is remarkable. The mobile communication systems which started  
20           with an analog type have been advanced to digital systems such

as a time division multiple access (TDMA) system and a code division multiple access (CDMA) system. Furthermore, an "IMT-2000" system capable of transmitting and receiving even moving image data has been rapidly developed. Besides, as wireless Internet techniques such as wireless application protocol (WAP) have been developed, communication subscribers can obtain access to resources on web sites by means of a mobile terminal having web browsers. That is, these technical improvements provide a mobile terminal which is used not only for speech communications but also for data communications.

Meanwhile, it is very inconvenient to a user when he or she tries to obtain necessary information through the mobile terminal, since it has fewer input means than a keyboard of a personal computer

Besides, the information which can be obtained through the communication terminal is generated variously and increased enormously with the wide use of Internet network. Here, if the information on is composed of huge data, it is desired to receive by means of a communication terminal including a stable communication environment, an appropriate display means, etc., such as a personal computer. Meanwhile, if the amount of information is not huge and the realtime transmission is important such as a news, a financial

information, a notification, an advertisement, etc., and if it can be received by means of a mobile terminal, it must be more advantageous and convenient to the receiver. However, as described above, since the mobile terminal has no appropriate data input means such as the keyboard, it is very inconvenient to obtain the realtime information through the mobile terminal. Furthermore, in case of notifications, or desired advertisements, for example, it is substantially impossible to find and obtain such information on time because the user can not notice even the existence of such information.

#### Disclosure of Invention

Accordingly, the object of the present invention is to provide method and system for supplying realtime customized information to a calling subscriber during a call setup process, that is, while the calling subscriber is waiting for a called party's answer after making a call setup request using a mobile terminal.

To accomplish an object in accordance with a first aspect of the present invention, there is provided a method for supplying customized information to a calling subscriber during a call setup process in a telecommunication system which includes a plurality of exchanges and enables a caller

and a receiver to communicate with each other by performing a call control process, the method comprising the steps of: receiving a call setup request from the caller; identifying whether the caller is an information provision service subscriber or not; supplying a predetermined information provision service if the caller is identified as a valid subscriber in the step of identification; executing the call control process for the caller; and connecting the call between the caller and a called party when the call is answered by the called party.

To accomplish another object in accordance with a second aspect of the present invention, there is provided a method for supplying customized information during a call setup process in a telecommunication system which includes a plurality of exchanges and enables a caller and a receiver to communicate with each other by performing a call control process, the method comprising the steps of: receiving a call request from the caller; identifying whether the caller is an information provision service subscriber or not; providing an access information to the caller for gaining access to predetermined detailed information if the caller is identified as the subscriber in the step of identification; executing the call control process for the caller; and connecting the call

between the caller and a called party when the called party answers to the call.

To accomplish another object in accordance with a first aspect of the present invention, there is provided a system for supplying predetermined customized information during a call setup process in a telecommunication system including: a home location register for providing predetermined call routing information about information provision service subscribers; a visitor location register for storing subscribers' information whether an originating call for each subscriber is one that needs to be referred to the home location register or not; an exchange, composed in a switching network, for executing a call control process, for referring to the visitor location register against the originating call from the subscriber, and for performing a call routing process to the information provision service using the routing information from the home location register if the caller is one that needs to be referred to the home location register; and an information provision apparatus, including a path control function for routing the call of the originating subscriber to the called party, for providing predetermined customized information to the originating subscriber of the call routed by the exchange, and for connecting the

originating subscriber to the called party when the call is answered by the called party.

To accomplish another object in accordance with a second aspect of the present invention, there is provided a system  
5 for supplying customized information during a call setup process in a telecommunication system comprising: a home location register for providing predetermined call routing information about the subscribers; a visitor location register for storing subscribers' information whether an originating  
10 call for each subscriber is one that needs to be referred to the home location register or not; an exchange, composed in a switching network, for executing a call control process, for referring the visitor location register against the originating call, for performing a call routing process to the  
15 information provision apparatus using the routing information of the home location register if the caller is one that needs to be referred to the home location register, for executing a path control process based upon a called number, and for connecting the originating subscriber to the called party when  
20 the called party answers to the call; and an information provision apparatus for providing predetermined customized information to the originating subscriber through the exchange.

To accomplish another object in accordance with a third aspect of the present invention, there is provided a system for supplying customized information during a call setup process in a telecommunication system comprising: a first  
5 exchange having a path control function; a second exchange having no path control function; and an information provision apparatus, interconnected with both the first and second exchanges through trunks, including the selective path control function, for providing predetermined customized information  
10 to the originating subscriber of the call routed by the exchange, the information provision apparatus executing the path control process for the call from the second exchange.

To accomplish another object in accordance with a fourth aspect of the present invention, there is provided a system  
15 for supplying customized information during a call setup process in a telecommunication system comprising: an exchange, composed in a switching network, having a database for storing subscribers' information indicating whether an originating caller is an information service subscriber or not, for  
20 executing a call control process, and for routing the corresponding call to an intelligent network if the caller is the information service subscriber; and an intelligent network including a service switching part for performing the



information provision service, an intelligent peripheral for storing a plurality of customized information to be provided to the subscribers, and a service switching part for performing a switching process for the call from the exchange, the service switching part transmitting a message including at least a calling party's number to the service control part, the service control part controlling the service switching part to connect the call to the intelligent peripheral and controlling the intelligent peripheral to output predetermined customized information, and the service switching part connecting the originating subscriber to the called party when the called party answers to the call.

The information provision apparatus is configured to be interconnected with the Internet and a short message service center.

Furthermore, the information provision apparatus comprises: an information service process subsystem, interconnected with an exchange through trunks, for executing a call routing process and a call connection process, for transmitting a service setup request message having at least a calling party's number to an information service control/management subsystem when the call is routed from the exchange, and for providing predetermined customized

information to the originating subscriber according to a service setup response message output from the information service control/management subsystem; and an information service control/management subsystem, including a database for storing subscribers' information and service information, for transmitting the service setup response message including at least an information ID against the information setup request message to the information service process subsystem, the information service process subsystem including a predetermined number translation table, transmitting the service setup request message, executing a terminating call process, and performing the call connection process between the originating subscriber and a called party when the call is answered by the called party.

According to the present invention, the information provision apparatus for the information provision service is interconnected with the exchange. The information provision apparatus capable of connecting to the Internet is connected with a short message service center through a predetermined communication network. The communication network subscribers can make a new subscription for the information provision service on the Internet. The subscription state is stored in the home location register as a service information. When the

subscriber makes a call, the exchange connects the call to the information provision apparatus. Then the apparatus supplies the customized information to the subscriber until the called party answers to the call.

5            Besides, the apparatus provides an access information to the originating subscriber, with which the subscriber can obtain more detailed information additionally. The access information such as a telephone number or a uniform resource locators URL is provided to the originating subscriber through  
10           the short message service. Here, the subscriber can select the kind of the customized on the Internet in advance, and the customized information can be also alternated automatically according to the subscriber's information or subscriber's location information as well.

15           It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

#### Brief Description of Drawings

20           The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a party of this specification, illustrate

embodiments of the invention and together with the description serve to explain the principles of the invention:

In the drawings:

Fig. 1 is a block diagram showing a general mobile  
5 communication system to which the present invention is applied;

Fig. 2 is a block diagram illustrating a basic concept of a method and system for providing realtime customized information during a call setup process in accordance with the  
10 present invention;

Fig. 3 is a block diagram showing an example of the concrete configuration of the information provision apparatus in Fig. 2;

Fig. 4 to Fig. 9 are arrow diagrams illustrating the  
15 operations of the information provision apparatus according to the present invention;

Fig. 10 is a block diagram showing another example of the information service process subsystem (IPS) in Fig. 3; and

Fig. 11 is a block diagram depicting a configuration of  
20 the information provision apparatus using an intelligent network.

#### Best Mode for Carrying Out the Invention

Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

Now referring to Fig. 1, a general mobile communication system comprises a plurality of exchanges EXs (EX1 to EXn) for switching communication paths. The respective exchanges EXs are interconnected through an E1 link. Each of the exchanges EXs is connected with a plurality of base station controller BCs (BC1 to BCn). Each of the base station controllers BCs is coupled to a plurality of base stations BSs (BS1 to BSn). Besides, each of the base stations BSs is linked to a plurality of mobile stations MSs through a common air interface such as TDMA or CDMA.

Meanwhile, each of the exchanges EXs is connected to the public switched telephone network (PSTN), the integrated services digital network (ISDN), or other mobile communication networks through predetermined gateways GWs (G1 to G3), and linked to the Internet through an inter-working function (IWF) and a gateway G4.

In the configuration described above, when a communication network subscriber tries to originate a call with a normal registered mobile station MS, that is, when the subscriber inputs a called number of the other communication

party and presses an originating key, for example a SEND key, both the originating number (calling number) and the terminating number (called number) are forwarded to the exchange EX through the base station BS and the base station controller BC. Then, the exchange EX translates the called number to execute the call connection, thus enabling the originating terminal to launch communications. That is, if the called party belongs to the same communication network with eh calling party, the exchange EX gets a routing information through the home location register HLR, not depicted, and routes the call to a called party's exchange EX based on the read data, thus enabling the caller to communicate with the receiver. If the called party does not belong to the same network, the exchange EX routes the call to the other communication network through the predetermined gateway GW (G1 to G4).

Meanwhile, while processing a terminating call, the switching network executes an alert process of supplying ring signals, etc., to the terminating terminal, and supplies the ring back tone or the other information equivalent to the ring back tone to the originating party. Here, these signals are supplied until the called party answers. However, the waiting time for the called party's answer is absolutely unnecessary

in the caller's position. Furthermore, if the receiver is a mobile subscriber, the caller may often wait for the answer longer than in case of using a wire telephone, not only because of the ambient noise, but also because of the  
5 unexpectedly weakened environments of the communication network. It has been measured that it takes usually eight to twelve seconds to receive the answer from the called party in the mobile environment.

Accordingly, the present invention is disclosed to  
10 provide predetermined customized information to the calling subscriber during a call setup process, that is, while waiting time for the called party's answer, thus utilizing the mobile station MS efficiently as a means of obtaining necessary information during the waiting.

15 Referring to Fig. 2, reference numeral 1 denotes the exchange such as a local exchange, a tandem exchange or a toll exchange. The exchange 1 is coupled to a short message service center (SMSC) 2 and a home location register (HLR) 3 through an E1 link and a No. 7 protocol, for example. As known well,  
20 the SMSC 2 is to transmit paging call numbers or character strings. The HLR 3 is to store the mobile subscribers' information including subscriber numbers, terminal types, terminal equipment numbers, subscriber's names, present

location information of terminals, authentication information, etc. The subscribers' information of the HLR 3 is provided appropriately to the exchange 1 and stored in a visitor location register (VLR) 11. The VLR 11 stores the subscribers' information of the HLR 3 corresponding to the subscribers located under the jurisdiction of the exchange 1. Repeatedly, the exchange 1, connected with the other plural exchanges, base station controllers, gateways, etc., as depicted in Fig. 1, enables the originating subscriber to communicate with the other party. Referring back to Fig. 2, an information provision apparatus 4 is coupled with the exchange 1 through the E1 link and an ISDN user part (ISUP) for example, and with the SMSC 2 and the HLR 3 through a 100 Base-T closed network (or a local area network) and a user datagram protocol/Internet protocol (UDP/IP) for example. Besides, the information provision apparatus is set to be connected with the subscribers on the Internet. The subscribers can make new subscriptions to the information provision service and select necessary customized information on the Internet in advance. Of course, this subscription procedure can be done through the other communication networks including off-line process. Furthermore, the information provision apparatus can provide voluntarily designated information, if the subscriber doesn't



select the kind of information. For example, notifications, advertisements, etc., can be provided selectively according to the location information, or the service subscriber's information including subscriber's name, occupation, age, sex, income, hobby, and so on.

When the mobile subscriber has become a service subscriber to the information providing service on the Internet, the subscription state will be stored in the HLR 3. The registration of the subscription information to the HLR 3 may be executed through the closed network, as shown in Fig. 2. Here, it is necessary to establish an appropriate interface between the HLR 3 and the information provision apparatus 4. Besides, the registration of the subscription information to the HLR 3 can be executed in a manner that a manager of the information provision apparatus 4 supplies the service information to a manager of the communication network system through a separate off-line or the other communication networks.

Meanwhile, the subscription information in the HLR 11 is sent to and stored in the VLR 11, thus being checked when the call setup request is received from the originating subscriber. The subscription information, with which the system decides whether to execute the information provision

service, can be stored by constructing a separate memory field or by using an existing memory field. When the call setup request is received from the originating subscriber, the exchange 1 supplies the information provision service based upon the service information stored in the VLR 11 to the originating terminal during the waiting time for the called party's answer. Here, of course, the information provision service is executed by interconnecting with the information provision apparatus 4. The information provision service is executed in the following two manners:

(1) the exchange 1 connects an originating subscriber with the information provision apparatus 4 when receiving a call setup request message from a subscribed terminal, and then executes a call connection process to a called party's exchange in the usual manner. The information provision apparatus 4 provides predetermined customized information to the originating subscriber. The exchange 1 couples the originating subscriber with the called party if an answer message ANM is received from the called party's exchange; and

(2) the exchange 1 routes an originating call to the apparatus 4 when receiving the call setup request message from the subscribed terminal. The apparatus 4 provides predetermined customized information to the originating

subscriber based upon the call setup request message, and executes the call connection process to the called party's exchange in the same manner with the above usual exchange. The apparatus 4 couples the originating subscriber with the called party if the ISUP ANM is received from the called party's exchange.

It would be found that the above two manners are substantially identical with each other in view of the procedure; that is, they execute the call connection process and, at the same time, provide the customized information if the call setup request message is received, and connect the originating subscriber with the called party if the ISUP ANM is received from the called party, thus providing a normal communications function. However, it would be noted that there is a difference that the call connection process is executed by the exchange 1 in the first manner, by the information provision apparatus 4 in the second manner. Nevertheless, the above two manners are substantially identical with each other because an element corresponding to the exchange 1 is indispensable for the information provision apparatus 4 to execute the call connection successfully. Meanwhile, the first configuration has the advantage that the amount of the trunk resources, installed between the existing switching network

and the information provision apparatus 4, is required relatively small, and also has the disadvantage that the exchanges established in the switching network should be upgraded. Whereas, the second configuration has the advantage that it is possible to supply the information service, not changing the existing switching network to a great extent, and also has the disadvantage that the amount of trunk resources is required relatively large and the configuration of the apparatus 4 becomes sophisticated.

The information provision apparatus 4 in Fig. 2 can provide additional information using the short message service. That is, since the information provision service according to the invention is terminated when receiving the called party's answer, more additional information would be necessary. In this case, the apparatus 4 of the invention supplies the access information, such as the telephone number, URL, etc., to the originating subscriber through the short message service center 2 after successfully terminating the regular information providing service. Subsequently, the subscriber can obtain access to the detailed information by just pressing, for example, a SEND button of the originating terminal indicating the access information at present. Of course, the additional short message service can be executed

selectively by the subscriber's need. Besides, the detailed information can be provided direct to the subscriber, instead of using the access information, if necessary.

Furthermore, in the manner described above, the exchange 1 triggers the information service for the caller based on the registered information of the VLR 11. Here, it is possible that the exchange 1 provides the information service to the caller selectively according to predetermined service access code (SAC) that the subscriber dialed. For example, if SAC for the information service is '#123' and if the subscriber inputs '#123' prior to the called number, that is, if the called number, included in the call setup request message received from the originating terminal, starts with #123, then, the exchange 1 initiates the information service by routing the call to the information provision apparatus 4. If not, the exchange 1 just executes the usual call connection process.

Now referring to Fig. 3, a block diagram showing an example of the concrete configuration of the information provision apparatus 4 in Fig. 2, the information provision apparatus 4 comprises a web server 10, an information service control and management subsystem (ICMS) 20 and an information service process subsystem (IPS) 30. The interconnection between the subsystems 10 and 20, and the subsystems 20 and 30

are established through a closed network 40 of the 100 Base-T Ethernet frame.

The web server 10, an Internet interface device, supplies an on-line services, through which subscriptions, cancellations, information inquiries and amendments, etc. are executed by the communication and/or service subscribers and the information providers (contents providers). The web server 10 supplies the above described information received on the Internet to the ICMS 20.

The ICMS 20, controlling the overall information providing service, comprises an information service management part (IMP) 21, an information service control part (ICP) 22 and a database 23. The IMP 21 and the ICP 22 are linked to the closed network 40 through a hub 24. The database 23 includes various necessary information such as service subscribers' information, contents providers' information, various customized information to be provided to the subscribers, and restriction information for restricting the service provision condition, etc. The stored information of the database 23 is managed by the ICP 22. The ICP 22 selects information to be provided to the subscriber, according to the IPS 30's demand, and transmits information code corresponding to the selected information, i.e., information ID, to the IPS 30. The ICP 22

includes further several functions such as statistics for collecting and providing various processing data to the IPS 30, system maintenance, and system download for downloading the customized information to the IPS 30 according to the demands from the system operator. Besides, after completing the information providing service successfully, the ICP 22 connected with the short message service center 2 provides the access information such as a telephone number or a URL to the subscriber so that the subscriber can obtain more detailed information additionally. Meanwhile, the IMP 21 coupled with the web server 10 executes the overall management including addition, deletion, amendment, etc. of the subscribers' information, the contents providers' information and the customized information. Furthermore, the IMP 21 provides a function of graphic user interface.

The IPS 30, linked to the exchange 1 through the E1 link and the ISUP protocol, provides the function of call routing, call connection and information transmission. The IPS 30 comprises a specialized resource management part (SRMP) 31, a specialized resource signaling part (SRSP) 32, a specialized resource part (SRP) 33 and a switch part (SWP) 34. The SRMP 31 is linked to the closed network 40 through a hub 35. The SRMP 31, the SRSP 32, the SRP 33 and SWP 34 are interconnected

through a control bus 36. Besides, it is possible that the ICMS 20 and the SRMP 31 are coupled with each other through the No. 7 protocol.

5       The SRMP 31 executes a function of supervising the E1 trunk, a function of the No. 7 protocol level 3 and 4, and a function of information provision service. Furthermore, the SRMP 31 can perform the call routing process of the called party with a predetermined number translation table.

10       The SRSP 32 comprises an E1 interface 321, a traffic interface 322 for transmitting and receiving traffic data, and a protocol process unit 323 for processing the No 7 level 1 and 2 protocol. The SRSP 32 controls an E1 trunk connection with the exchange 1, a function of transmitting and receiving traffic data including the customized information, and a  
15       function of transmitting and receiving data through the ISUP protocol between the exchange 1 and the SRMP 31.

20       The SRP 33 comprises a specialized resource control unit 331 for sending the selected information according to the information ID received from the SRMP 31, and an information generating unit 332, including a storing means for storing a plurality of customized information, for outputting predetermined customized information according to the control of the specialized resource control unit 331. The specialized



resource control unit 331 controls the output of the customized information, and updates the customized information for the information generating unit 332 corresponding to the downloading process executed through the ICP 22 in the ICMS 20 and the SRMP 31.

The SWP 34 includes a switch device 341 for switch-connecting the traffic interface 322 of SRSP 32 and the information generating unit 332 of the SRP 33, and a switch control unit 342 for controlling the switch device 341 according to the control data from the SRMP 31. Consequently, the SWP 34 sends the customized information, output from the information generating unit 332, to the subscriber, according to the control of the SRMP 31, and serves the transmission and reception of No. 7 signal data between the exchange 1 and the protocol process unit 323.

Hereinafter, the operations of the system comprised of the above configuration will be discussed.

First, the data updating operation for the database 23 of the ICMS 20 is performed as follows:

As described in detail above, the database 23 includes various statistics regarding the information provision service generated by the ICP 22, as well as the basic information such as the service subscribers' information, the contents

providers' information and the customized information to be provided to the subscribers. Here, the basic information is updated through on-line or off-line. The off-line updating operation is executed by the manager of the ICMS 20. That is,

5 the manager gains access to the database 23 through the IMP 21 and the ICP 22 to execute the data updating process. The on-line updating operation is performed through the web server 10. The web server 10 provides a predetermined web page, through which the mobile subscriber and the contents provider  
10 subscribe to the information provision service and amend the subscription state. The above subscription information made through the web page is stored in a predetermined directory in the web server 10 and accessed by the IMP 21 of the ICMS 20 at regular intervals. Here, the access to the information can be  
15 executed by a program automatically or by a service manager manually. Then, the accessed information is updated to the database 23 through the ICP 22 of the ICMS 20.

The customized information among the updated information of the database 23 is transmitted to the IPS 30 and downloaded  
20 to the information generating unit 332 of the SRP 33. That is, the ICP 22 of the ICMS 20 transmits the updated customized information to the SRMP 31 through the closed network 40. The SRMP 31 sends the received information to the specialized

resource control unit 331 of the SRP 33 so as to update the information generating unit 332. The information generating unit 332 stores the information ID for information discrimination and the customized information corresponding to the information ID. Meanwhile, the service information regarding the new subscription, cancellation, etc., among the updated information of the database 23 is supplied to the manager of the communication network, and used to update the HLR 3.

Next, the procedure for providing the realtime customized information to the subscriber is as follows:

If a call setup request message is received from an originating terminal, the exchange 1 in Fig. 2 refers to the VLR 11 for the subscriber's profile information based on the originating number included in the call setup request message. Here, the VLR 11 has predetermined flag data for the individual callers. The flag data indicate whether or not the exchange 1 should refer to the HLR 3 to execute the originating call process. As a result of referring to the VLR 11, if the flag data is not set, the exchange 1 executes a normal call connection. That is, the exchange 1 performs a terminating call process by translating the called number included in the call setup request message. Whereas, if the

flag data is set, the exchange 1 transmits an origination request message (ORREQ) including the originating number and the called number to the HLR 3 according to an IS-41C protocol, for example. Then, the HLR 3 receiving the ORREQ message from the exchange 1 identifies whether the caller is a service subscriber or not. If so, the HLR 3 transmits an orreq message including a call routing information to the exchange 1. Here, the call routing information is to connect the originating caller with the information provision apparatus 4.

If the orreq message is received from the HLR 3, the exchange 1 performs the call routing process by transmitting a predetermined initial address message (IAM) to the information provision apparatus 4. The IAM includes the originating number and the called number, and the originating caller's location information if necessary. The caller's location information is transmitted by adding the corresponding information to a user-to-user information (UUI) parameter of the IAM, for example.

Table 1 given below shows, by way of example, the configuration of the UUI parameter, wherein a system ID denotes a network identification number for an originating exchange, a switch number is a discrimination number for the originating exchange, a BSC ID means a discrimination number for the base station controller and a BS ID is a

discrimination number for the originating subscriber's the base station.

[Table 1]

	8	7	6	5	4	3	2	1	Bit octet
5	User-to User information								1
	UUI length								2
	Protocol discriminator								3
	Protocol discriminator length								4
	System ID								5
									6
10	Switch number								7
	BSC ID								8
	BS ID								9

Fig. 4 shows a process of executing the information provision service in the information provision apparatus 4, where the service is performed successfully.

If the initial address message (IAM) is received from the originating exchange, the IAM is applied to the protocol process unit 323 of the SRSP 32 by way of the E1 interface 321 and the traffic interface 322 in the SRSP 32, and the switch device 341 of the SWP 34, then, transmitted to the SRMP 31 through the control bus 36. Next, the SRMP 31 generates a service request message, based on the received IAM including the originating number, the called number and the subscriber's location information, and sends it to the ICP 22 of the ICMS

20 through the closed network 40.

Table 2 given below shows, by way of example, the configuration of the service request message transmitted from the SRMP 31 to ICP 22.

5 [Table 2]

	Field	Length
	Message ID	1
	IPS number	1
	Originating number length	1
10	D0	11
	D1	
	~	
	D10	
	Called number length	1
15	D0	25
	D1	
	~	
	D12	
	Originating location information length	1
20	Originating subscriber's location information	5

In Table 2, an IPS number denotes the identification number of the IPS 30, in case that plural IPSs 30 are established according to the increase of the service subscriber.

25 Besides, the SRMP 31 generates an address complete message (ACM), as a response to the IAM from the originating

exchange, and transmits it to the originating exchange by way of the protocol process unit 323, the switch device 341, the traffic interface 322 and the E1 interface. IF the service request message, as shown in Table 2, is received from the SRMP 31, the ICP 22 of the ICMS 20 gains access to the database 23 to select the information ID, i.e., the kind of information to be supplied to the corresponding subscriber, based on the originating subscriber's number and the location information in the received information. Then, the ICP 22 generates a service setup response message and transmits it to the SRMP 31.

Table 3 given below shows, by way of example, the configuration of the service setup response message. A CR ID denotes a call reference ID allotted by the ICP 22 against the service setup request message from the SRMP 31 as a discrimination number of the corresponding call. A RSLT represents a result datum indicating whether to execute the information provision service.

[Table 3]

Field	Length
Message ID	1
IPS number	1
CR ID	2

[Table 3-continued]

Field	Length
RSLT	1
Information ID	2
Delay time	1

5

That is, if the value of the RSLT is "0", the service is to be provided, whereas, if the value is not "0", the service is to be suspended. Here, the service suspension condition includes: when the originating caller is not the service subscriber;

10

when the database 23 gets out of order; when the originating subscriber is set to an inactive state; when service time is closed; when no appropriate customized information is

available, etc. An information ID denotes the kind of information to be supplied to the subscriber. Besides, a delay

15

time is a value of time for delaying the call setup to the called party. That is, there would be a difference in the

duration of the customized information according to the kind of the information. In case that the amount of the customized

information is large, but the called party answers shortly,

20

that is, there is given no ample time to receive the customized information completely, the subscriber fails in receiving all the information. Accordingly, the delay time can be set, for example, 0 to 30 seconds variably, according to



the amount of the customized information, or according to the subscriber's demand.

When the service setup response message, as shown in Table 3, is given from the ICP 22 to the SRMP 31, the SRMP 31  
5 executes the information provision service based upon the received message. First, if the value of the RSLT of the received service setup response message is "0", that is, the service is to be provided, the SRMP 31 transmits a channel setup message to the switch control unit 342 of the SWP 34.  
10 The SRMP 31 also couples the originating subscriber with the SRP 33 through a predetermined traffic channel and sends the above channel information and the information ID received from the ICP 22 to the specialized resource control part 331. Then, the specialized resource control unit 331 controls the  
15 information generating unit 332 to forward the customized information corresponding to the information ID through an allotted traffic channel, thus providing the customized information to the originating subscriber. Subsequently, if the delay time passes, the time being defined and included in  
20 the service setup response message, the SRMP 31 translates the called number based on the number translation table to execute an outgoing trunk call process. That is, the SRMP 31 transmits the IAM to the terminating exchange. Then, if an answer

message (ANM) is received from the terminating exchange against the IAM, the SRMP 31 outputs a channel release message to the specialized resource control unit 331 of the SRP 33 so as to stop providing the service for the subscriber. At the same time, the SRMP 31 generates a service provision report message, indicating the result of the service provision, and forwards it to the ICP 22.

Meanwhile, Table 4 given below shows, by way of example, the configuration of the service provision report message described above. A RSN represents a reason of terminating the information provision service.

[Table 4]

Field	Length
Message ID	1
IPS number	1
CR ID	2
RSN	1

Table 5, given below shows, by way of example, the terminating states of the information provision service according to the data values of the RSN.

[Table 5]

Data value	Service Termination Reasons
0	Service completed, Call succeeded

1	Service completed, Call failed
2	Service completed, Call unknown
3	Call cancelled by caller
4	Call cancelled due to abnormal outgoing trunk call setup
5	Failed in switch-connection
6	Internal timer expired
7	Failed in terminating call setup due to internal reasons

When the ANM is received from the terminating exchange, the SRMP 31 controls the SWP 34 to connect the originating subscriber with the terminating exchange, and sends the ANM to the originating exchange. Consequently, the caller and the called party are connected with each other through the traffic channel.

Furthermore, if the service provision report message indicating that the service provision is executed normally is received from the SRMP 31, the ICP 22 in the ICMS 20 gains access to the database 23 to check whether or not the customized information is one that needs supplying additional access information such as the telephone number or URL information with which the subscriber may obtain more detailed information. If so, the ICMS 20 outputs a message to the short message center so as to transmit the access information to the

subscriber.

Meanwhile, in executing the information provision service describe above, it may happen that the called party doesn't answer over a predetermined time. In this case, it may happen  
5 that the customized information is provided repeatedly and continuously to the originating subscriber. Considering the above situation, the ICP 22 starts a predetermined timer programmably after transmitting the service setup response message to the SRMP 31. So, if the service provision report  
10 message is not received from the SRMP 31 for a predetermined time set by the timer, the ICP 22 forwards a service cancel request message to the SRMP 31. As described above, the ICP 22 can apply the service cancel request message to the SRMP 31 in order to stop supplying the information provision service, if  
15 necessary.

Table 6, given below shows, by way of example, the structure of the service cancel request message.

[Table 6]

Field	Length
Message ID	1
IPS number	1
CR ID	2
RSN	1

20

In Table 6, the RSN represents a reason of terminating the information provision service, that is, the value "0" denotes a normal termination, whereas, the value other than "0" means abnormal terminations. When the service cancel request message is received from the ICP 22, the SRMP 31 controls the SWP 34 and the SRP 33 to stop the information provision service, then, connects the traffic channels between the originating subscriber and the called party.

Meanwhile, as shown in Table 3 and 5, it may happen that the information provision service is not completed as following various abnormal states:

(1) if the value of the RSLT in Table 3 is not "0", by reasons that the caller is not a service subscriber, that the database 23 gets out of order, that the originating subscriber is set in an inactive state, that service time is closed, that no appropriate customized information is available, etc.;

(2) if the originating subscriber cancels the call in the middle of receiving the service;

(3) if the call is cancelled due to an abnormal outgoing trunk call process, for example, if a call release message (REL) is received from the terminating exchange; or

(4) if the internal timer is terminated, for example, if the ANM is not given back from the terminating exchange for a

predetermined time after sending the IAM, as shown in Fig. 4.

The first case is that a message indicating that the information provision service is impossible is transmitted from the ICP 22 to the SRMP 31. Here, as shown in Fig. 5, the SRMP 31 forwards the IAM to the terminating exchange at once. Next, the SRMP 31 transmits the ANM to the originating exchange if the ANM is received from the terminating exchange, thus executing a normal call routing process.

Fig. 6 illustrates the second case. If the release message (REL) is received from the originating exchange by reasons that the originating subscriber cancels the call in the middle of receiving the service, etc., the SRMP 31 forwards a release complete message (RLC) to the originating exchange, and sends the service provision report message, as shown in Table 4 and 5, to the ICP 22. Besides, if the REL is received from the originating exchange after transmitting the IAM to the terminating exchange, the SRMP 31 forwards the REL to the terminating exchange as well.

Fig. 7 depicts the third case. If the REL is received from the terminating exchange, the SRMP 31 transmits the RCL as a response to the REL to the terminating exchange. Also, the SRMP 31 sends the service provision report message, as shown in Table 4 and 5, to the ICP 22. Furthermore, the SRMP

31 controls the SWP 34 and the SRP 33 to stop the information provision service, and transmits the REL to the originating exchange to execute the call release procedure.

Fig. 8 explains the fourth case. After transmitting the  
5 initial address message (IAM) to the terminating exchange, the SRMP 31 starts the timer to check whether or not an appropriate message, for example, the address complete message (ACM), has been received from the terminating exchange for a predetermined time. If such a message has not been received  
10 within the predetermined time, the SRMP 31 controls the SWP 34 and the SRP 33 to stop the process of providing the service, and forwards the REL to both the originating and terminating exchanges to execute the release procedure. Furthermore, the SRMP 31 generates the service provision report message, as  
15 shown in Table 4 and 5, to send it to the ICP 22. Next, the ICP 22 checks whether the information provision service has been executed successfully or not, referring to the service provision report received from the SRMP 31. If so, the ICP 22 obtains access to the database 23 to decide whether or not the  
20 customized information is one that needs supplying additional access information such as the telephone number or URL information with which the subscriber may obtain more detailed information. If so, the ICP 22 outputs a message to the short

message center so as to transmit the access information to the subscriber.

Furthermore, the ICP 22 takes statistics on the executed information provision services including the numbers of the succeeded service and failed service, respectively, and whether the subscriber accessed the detailed information additionally using the access information or not.

Subsequently, the statistics information is stored to the database 23. Here, it is confirmed whether or not the

subscriber received the detailed information using the access information, based on the called number included in the service request message transmitted from the SRMP 31 to the ICP 22. That is, if the originating subscriber executes a call setup request using the access information, the originating

call is connected in the same manner described above. Here, the service request message, transmitted from the SRMP 31 to the ICP 22 of the information provision apparatus 4, includes the corresponding access information. Accordingly, it is possible to analyze the reaction and inclination of the

subscribers, by counting the numbers of the service request message having the access information as the called number.

The various statistics information described above can be checked by the system manager through the ICP 21, or by the



customer through the web server 10 on the Internet.

Meanwhile, the embodiment described above is based on the configuration that the exchange 1 performs the call routing for the originating call to the information provision

5 apparatus 4, and the information provision apparatus 4 executes both the information provision and the terminating path control. Also, it is accomplished by another manner in which the exchange 1 connects the originating subscriber with the information provision apparatus 4, and controls the call

10 routing to the called party, and the information provision apparatus 4 only executes the information provision for the originating subscriber. That is, the exchange 1 is put in charge of the terminating path control and the apparatus 4

takes charge of the information provision service. To embody  
15 the above manner, the exchange 1 is to establish the function of the path control for connecting the originating subscriber with the information provision apparatus 4, and simultaneously, for routing the call to the called party.

Meanwhile, in the embodiment, the path control function in the  
20 information provision apparatus 4 is achieved by means of the specialized resource management part (SRMP) 31 capable of translating the number and controlling the trunk call, the specialized resource signaling part (SRSP) 32, and the switch

part (SWP) 34. However, these means are not new for the exchange 1. The conventional exchange already includes the functions of the number translation, the trunk call control including incoming trunk and outgoing trunk, and the process for various protocols. In short, the path control function for the information provision service can be accomplished merely by upgrading the software of the conventional exchange. If the exchange 1 includes the path control function, as described above, the information provision apparatus 4 is utilized only as an apparatus for providing the customized information. The information provision apparatus 4 in Fig. 3 can be applied advantageously to a system comprising the exchange having the path control function.

Fig. 9 illustrates the messages transmitted and received between the exchange 1 having the path control function and the information provision apparatus 4 for providing the customized information only. The messages pursuant to the ISUP protocol are used to transmit and receive data for the information provision service.

If the call setup request message is received from the originating terminal, as described in detail above, the exchange 1 refers to the VLR 11 and the HLR 3 based on the originating number included in the call setup request message,

and receives the orreq message from the HLR 3. The orreq message includes the routing information corresponding to the information provision apparatus for providing the customized information to the originating subscriber. The routing information is to couple the originating subscriber with the information provision apparatus during the call setup process. If the orreq message is received from the HLR 3, the exchange 1 transmits the initial address message (IAM), including the originating number, the called number, and the caller's location information, to the information provision apparatus 4.

If the IAM is received, the SRMP 31 in the information provision system 4 forwards the address complete message (ACM) to the originating exchange, and generates the service setup request message, as depicted in Table 1, based on the received message. The service request message is then sent to the ICP 22 of the ICMS 20. Next, the ICP 22 generates the service setup response message, as shown in Table 3, and provides it to the SRMP 31. The SRMP 31 executes the process of providing the customized information based upon the service setup response message. That is, the SRMP 31 confirms whether or not the information provision service is available based on the value of RSLT in the service setup response message. If so,

the SRMP 31 sends the ANM to the originating exchange. In this case, the delay timing data received in the service setup response message is included in the ANM. Next, according to the service setup response message, the SRMP 31 controls the SWP 34 and the SRP 33 to transmit the customized information through the traffic channel allocated between the exchange 1 and the service provision apparatus 4. Consequently, the originating subscriber receives the customized information from the information provision apparatus 4.

Subsequently, if the predetermined time, corresponding to the delay time included in the ANM, expires, the exchange 1 executes the number translation for the called number, and forwards the IAM to the terminating exchange. Then, if the ANM is received, corresponding to the IAM, from the terminating exchange, the exchange 1 sends the REL to the information provision apparatus 4 and, at the same time, performs the call connection between the originating subscriber and the called party. Here, the REL includes the information regarding the service termination reasons. The SRMP 31 generates the service provision report message, as shown in Table 4 and 5, and sends it to the ICP 22. Besides, the SRMP 31 forwards the release complete message (RLC) as a response to the REL, to the originating exchange.

Furthermore, if the value of RSLT of the service setup response message transmitted from the ICP 33 to the SRMP 31 is not "0", or when the information provision service is unavailable for some reason or other, the SRMP 31 sends the REL to the exchange 1. Then, the exchange 1 forwards the RLC to the information provision apparatus 4 and, at the same time, performs the call routing to the called party. Of course, in this case, the SRMP 31 generates the service provision report message, as shown in Table 4 and 5, and sends it to the ICP 22.

Next, the ICP 22 checks whether the information provision service has been normally executed or not, referring to the service provision report message received from the SRMP 31. If so, the ICP 22 gains access to the database 23 to read whether or not the customized information is one that needs supplying additional access information such as the telephone number or URL information with which the subscriber may obtain more detailed information. If so, the ICP 22 outputs a message to the short message center so as to transmit the access information to the subscriber. Furthermore, the ICP 22 takes statistics on the executed information provision services and stores the result to the database 23.

In the embodiment described above, the customized

information can be supplied to the originating subscriber in a manner that the exchange 1 is put in charge of the path control and the apparatus 4 takes charge of the information provision service merely. Of course, in the embodiment of the invention, it is possible to apply the information provision apparatus 4 insitu, not changing the configuration, and use the same messages transmitting and receiving between the exchange 1 and the apparatus 4.

As discussed above in detail, the information provision apparatus 4 can be adapted in the same manner, even if the exchange 1, interconnected with the apparatus 4, has the function of path control for information provision service. Besides, it is possible to connect the apparatus 4 to both the exchanges with or without the path control function, at the same time. However, in this case, it is required that the apparatus 4 should notices whether or not the exchange includes the path control function. The data for the exchanges' path control function can be maintained with the route information or trunk information. That is, the SRMP can notice whether or not the exchanges have the path control function by referring to the route information or trunk information.

Fig. 10 is a block diagram showing another example of the

configuration of the information service process subsystem IPS  
30 in Fig. 3. In this embodiment of Fig. 3, the SRMP 31  
couples the originating subscriber with the SRP 33, and  
connects the originating subscriber to the terminating  
5 exchange if the ANM is received from the terminating exchange.  
Meanwhile, in this configuration of the embodiment, it may  
happen that a busy tone or other voice information such as  
notifications is received without any message during the  
waiting time for the called party's answer. Accordingly, it is  
10 necessary to make an appropriate counterplan to overcome the  
problem.

Consequently, an audible tone detecting unit 333 is  
further established in the SRP 33 in Fig. 10. The audible tone  
detecting unit 333, having a digital signal processor (DSP),  
15 for example, detects voice information or signal tones such as  
ring back tone, congestion tone, busy tone, etc., and informs  
the SRMP 31 of the result.

The SRMP 31 controls the SRP 33 to couple the path from  
the terminating exchange and the audible tone detecting unit  
20 333 through the traffic channel, when controlling the SWP 34  
to couple the originating subscriber and the SRP 33 through  
the traffic channel. If the audible tone such as busy tone or  
notification is detected by the audible tone detecting unit

333 while providing the customized information through the information generating unit 332, the SRMP 31 stops the information provision service and executes the process of connecting the originating subscriber to the terminating  
5 exchange. Consequently, it is possible to execute a stable call process since the SRMP 31 can detect the audible tones from the terminating exchange even while the originating subscriber is receiving the providing service.

Meanwhile, in the embodiment describer above, the  
10 information provision service is executed by way of the separate information provision apparatus 4, whereas, it is possible to execute the service through an existing intelligent network constructed by applying the identical concept of the present invention.

15 Fig. 11 is a block diagram depicting a configuration of an information provision apparatus using an intelligent network in accordance with another embodiment. A service switching part (SSP) 120, a service control part (SCP) 130 and an intelligent peripheral (IP) 140 are interconnected through  
20 a No. 7 signaling protocol to construct the intelligent network. The SSP 120 is coupled with the exchange 1 through the E1 trunk and ISUP protocol, for example. The IP 140 is interconnected to the SSP 120 through the No. 7 signaling



system and ISUP protocol for example, by means of trunks physically. The IP 140 includes a plurality of information provision devices. The number of the devices is set appropriate to the kind of the customized information and to the number of channels with the SSP 120.

The SCP 130 corresponds to the ICMS 20 in Fig. 3 and includes a database corresponding to the database 23 in Fig. 3, accordingly. The SCP 130 gains access to the database and supplies appropriate control information to the corresponding devices, according to the demand from the SSP 120 and the IP 140. If the SSP120 receives a call connection information including the originating number, the called number, the originating subscriber's location information, etc. for example, from the local exchange 1 through the ISUP protocol, the SSP 120 sends the received information to the SCP130. The SCP 130 allots a separate call reference number against the corresponding call and outputs a predetermined control message to the SSP 120, thus coupling the corresponding call to the IP 140.

If the call is received from the SSP 120, the intelligent peripheral 140 refers to the SCP 130 using the call reference number. Besides, the IP 140 connects the customized information provision device to the originating subscriber

based on the information ID received from the SCP 130, thus providing the customized information to the originating subscriber.

Meanwhile, if the originating subscriber is connected to the IP 140, the SSP 120 executes the number translation based on the called number, and forwards the initial address message (IAM) to the terminating exchange. Then, if the answer message (ANM) is received from the terminating exchange, as a response to the IAM, the SSP 120 couples the originating subscriber with the terminating exchange.

In the configuration described above according to another embodiment of the invention, the information provision apparatus using the intelligent network as described above executes the information provision service in the same manner with the embodiments discussed with reference to Fig. 2 and 3. Besides, it is possible to supply the information provision service to the originating subscriber successfully, minimizing the modification of the software and hardware of the exchange 1, since the information provision service is executed by means of the service switching part (SSP) 120 in the intelligent network (IP) 140.

In the embodiments described above, the information provision apparatus is defined to provide the customized

information to the originating subscriber, however, if the customized information is commercial advertisements, it is possible to discount the telephone fees as much as the time for receiving the corresponding commercial advertisement.

5           Meanwhile, the above embodiments are discussed with the apparatus for providing the access information with which the subscriber obtains more detailed information when the customized information has been transmitted to the originating subscriber successfully. However, the customized information  
10       can be supplied by various manners in which the service information stored in the database 23 is controlled appropriately. For example, the access information may be supplied at any time without regard to the completion of the information provision service. Besides, it is possible to  
15       provide only the access information with which the originating subscriber may obtain more detailed information, without providing the customized information.

          Besides, it is still possible to provide character strings, images, moving images, etc., which the subscriber can  
20       perceive visibly, instead of the access information, in conformity with the capabilities of the terminal and the system as well.

          Furthermore, in the embodiments described above, the

information provision service is supplied only to the service subscriber in a manner that the exchange 1 refers to the home location register (HLR) 4 to identify whether the originating caller is an information provision service subscriber or not, however, it is also possible to supply the information provision service to all the caller by applying the identical concept of the present invention. This makes it more advantageous and convenient, if the information is an official announcement which needs prompt transmission, for example.

In addition, the embodiment of the present invention is discussed based on the mobile communication system, however, it is still possible to apply the identical concept of the invention to the PSTN or other communication systems.

In accordance with the present invention as described above, the information provision service is executed corresponding to the subscriber's originating call during the waiting time for the called party's answer. Accordingly, the service subscriber can obtain the realtime information efficiently without any additional key operation or time consumption.

Besides, according to the present invention, it is possible to provide realtime customized information to the service subscriber based on the originating subscriber's

information and/or its location information. Since the customized information can be selected through on-line network, the efficiency of the information provision service is enhanced as well.

5           Furthermore, according to the invention, it is possible to utilize the communication terminals such as telephone set or mobile terminal efficiently as a means of gaining necessary information, since the subscriber can receive the customized information without any additional key operation.

10           Moreover, according to the invention, the information provision service supplies the access information additionally with which the subscriber can obtain more detailed information, after providing predetermined customized information to the subscriber. Accordingly, the subscriber can  
15 gain desired customized information, minimizing the key operation.

          It will be apparent to those skilled in the art that various modifications and variations can be made in a method and apparatus for providing customized information during call  
20 setup process in telecommunication system of the present invention without deviating from the spirit or scope of the invention. Thus, it is intended that the present invention cover the modifications and variations of this invention

provided they come within the scope of the appended claims and their equivalents.

Claims:

1. A method for providing predetermined information during a call setup process in a telecommunication system which includes a plurality of exchanges and enables a caller and a receiver to communicate with each other by performing a call process, the method providing predetermined customized information to an originating subscriber during the call setup process.

2. A method for providing customized information during a call setup process in a telecommunication system which includes a plurality of exchanges and enables a caller and a receiver to communicate with each other by performing a call control process, the method comprising the steps of:

receiving a call setup request from the caller;

identifying whether the caller is an information provision service subscriber or not;

supplying a predetermined information provision service if the caller is identified as a valid subscriber in the step of identification;

executing the call control process for the caller; and

connecting the call between the caller and a called party

when the call is answered by the called party.

3. The method for providing customized information during call setup process in telecommunication system as recited in claim 2, where the step identifying the subscriber  
5 is executed base on an originating number.

4. The method for providing customized information during call setup process in telecommunication system as recited in claim 2, wherein the step of identifying the subscriber is executed based on a predetermined service access  
10 code contracted between the caller and the exchange, the service access code being dialed by the caller when making the call setup request.

5. The method for providing customized information during call setup process in telecommunication system as  
15 recited in claim 2, wherein further includes a step of selecting the customized information prior to making the call setup request by the caller.

6. The method for providing customized information during call setup process in telecommunication system as



recited in claim 2, wherein further includes a step of confirming the kind of the customized information prior to the step of the information provision.

5        7.    The method for providing customized information during call setup process in telecommunication system as recited in claim 2 or 6, wherein the step of confirming the kind of the customized information is performed based on at least an originating subscriber's information and an originating subscriber's location information.

10       8.    The method for providing customized information during call setup process in telecommunication system as recited in claim 2, wherein further includes a step of delaying the terminating call process for a predetermined time.

15       9.    The method for providing customized information during call setup process in telecommunication system as recited in claim 8, wherein the delay time for delaying the terminating call process is selected by the subscriber.

10.    The method for providing customized information

during call setup process in telecommunication system as recited in claim 8, wherein the delay time for delaying the terminating call process is selected by the customized information to be supplied to the originating subscriber.

5           11. The method for providing customized information during call setup process in telecommunication system as recited in claim 2, wherein further includes a step of supplying an access information to the originating subscriber, the access information being used by the subscriber who wants  
10 to obtain more detailed information corresponding to the information provided.

          12. The method for providing customized information during call setup process in telecommunication system as recited in claim 11, wherein the access information is  
15 provided through a short message service center.

          13. The method for providing customized information during call setup process in telecommunication system as recited in claim 11, wherein the access information is a telephone number.

14. The method for providing customized information during call setup process in telecommunication system as recited in claim 11, wherein the access information is a URL information.

5           15. The method for providing customized information during call setup process in telecommunication system as recited in claim 11, 12, or 13, wherein the access information is provided if the information provision service has been executed to the subscriber normally.

10           16. The method for providing customized information during call setup process in telecommunication system as recited in claim 2, wherein a predetermined call charge is discounted if the originating subscriber receives a commercial advertisement.

15           17. The method for providing customized information during call setup process in telecommunication system as recited in claim 2, wherein further includes a step of providing detailed information corresponding to the information provided.

18. The method for providing customized information during call setup process in telecommunication system as recited in claim 17, wherein the detailed information is a character string information.

5        19. The method for providing customized information during call setup process in telecommunication system as recited in claim 17, wherein the detailed information is a image information.

10       20. The method for providing customized information during call setup process in telecommunication system as recited in claim 17, wherein the detailed information is a moving image information.

15       21. A method for providing customized information during a call setup process in a telecommunication system which includes a plurality of exchanges and enables a caller and a receiver to communicate with each other by performing a call control process, the method comprising the steps of:

          receiving a call request from the caller;  
          identifying whether the caller is an information  
20       provision service subscriber or not;

providing an access information to the caller for gaining access to predetermined detailed information if the caller is identified as the subscriber in the step of identification;

executing the call control process for the caller; and

5        connecting the call between the caller and a called party when the called party answers to the call.

22. A system for providing customized information during a call setup process in a telecommunication system comprising:

10        a subscriber's information storing means for storing subscribers' information indicating whether an originating caller is an information service subscriber or not;

an exchange, composed in a switching network, for executing a call process between a caller and a called party,  
15        and for routing the corresponding call to an information provision apparatus if the caller is the information service subscriber; and

an information provision apparatus, including a path control function for routing the originating call to a called  
20        party, for providing a predetermined provision service to the originating subscriber of the call routed by the exchange, and for connecting the originating subscriber to the called party when the call is answered by the called party

23. The system for providing customized information during call setup process in telecommunication system as recited in claim 22, wherein the exchange supplies an originating number, a terminating number and an originating subscriber's location information to the information provision apparatus.

24. The system for providing customized information during call setup process in telecommunication system as recited in claim 23, the originating subscriber's location information is transmitted through a UUI parameter.

25. The system for providing customized information during call setup process in telecommunication system as recited in claim 23, wherein the information provision apparatus supplies the predetermined provision service to the originating subscriber based on at least one of the originating number and the originating subscriber's location number.

26. The system for providing customized information during call setup process in telecommunication system as recited in claim 22, wherein the information provision

apparatus, connected with a short message service center, can transmit a short message.

27. The system for providing customized information during call setup process in telecommunication system as  
5 recited in claim 26, wherein the short message is an access information with which the originating subscriber can obtain more detailed information corresponding to the customized information.

28. The system for providing customized information  
10 during call setup process in telecommunication system as recited in claim 27, wherein the access information is a telephone number.

29. The system for providing customized information during call setup process in telecommunication system as  
15 recited in claim 27, wherein the access information is a URL information.

30. The system for providing customized information during call setup process in telecommunication system as recited in claim 27, wherein the access information is

supplied if the information provision service has been executed successfully.

31. The system for providing customized information during call setup process in telecommunication system as  
5 recited in claim 22, wherein the information provision apparatus can be connected with the Internet.

32. The system for providing customized information during call setup process in telecommunication system as  
recited in claim 31, wherein an originating subscriber selects  
10 a kind of the customized information on the Internet.

33. The system for providing customized information during call setup process in telecommunication system as  
recited in claim 22, wherein the information provision apparatus delays the call process for the originating  
15 subscriber for a predetermined time.

34. The system for providing customized information during call setup process in telecommunication system as  
recited in claim 33, wherein the delay time is set according to the kind of the customized information.



35. The system for providing customized information during call setup process in telecommunication system as recited in claim 33, wherein the delay time is set by a service subscriber.

5        36. The system for providing customized information during call setup process in telecommunication system as recited in claim 22, wherein the information provision apparatus includes:

10        an information service process subsystem, interconnected with an exchange through trunks, for executing a call routing process and a call connection process, for transmitting a service setup request message having at least a calling party's number to an information service control/management subsystem when the call is routed from the exchange, and for  
15        providing predetermined customized information to the originating subscriber according to a service setup response message output from the information service control/management subsystem; and

20        an information service control/management subsystem, including a database for storing subscribers' information and service information, for transmitting the service setup response message including at least an information ID against

the information setup request message to the information service process subsystem,

the information service process subsystem including a predetermined number translation table, transmitting the service setup request message, executing a terminating call process, and performing the call connection process between the originating subscriber and a called party when the call is answered by the called party.

37. The system for providing customized information during call setup process in telecommunication system as recited in claim 36, wherein the service setup request message includes an originating subscriber's location information, and the information service control/management subsystem generates an information ID based on at least one of the originating number and the originating subscriber's location number.

38. The system for providing customized information during call setup process in telecommunication system as recited in claim 36, wherein the information service process subsystem transmits a service provision report message, indicating a result of providing the service, to the information service control/management subsystem.

39. The system for providing customized information during call setup process in telecommunication system as recited in claim 38, wherein the information service control/management subsystem takes statistics on executed information provision services.

40. The system for providing customized information during call setup process in telecommunication system as recited in claim 36 or 38, wherein the information control/management subsystem is coupled to a short message service center and transmits a short message.

41. The system for providing customized information during call setup process in telecommunication system as recited in claim 40, wherein the short message is transmitted based on the service provision report message.

42. The system for providing customized information during call setup process in telecommunication system as recited in claim 36, wherein the information provision apparatus further includes a web server capable of connecting to the Internet, the web server supplying an access function for accessing to the database.

43. The system for providing customized information during call setup process in telecommunication system as recited in claim 36, wherein the service setup response message includes a predetermined timing data, the information service process subsystem delays the terminating call process for the corresponding timing data.

44. The system for providing customized information during call setup process in telecommunication system as recited in claim 36, wherein the information service process subsystem comprises:

a specialized resource part, including predetermined customized information to be supplied to the originating subscriber, for outputting the corresponding customized information through a predetermined traffic channel;

a specialized resource signaling part for executing a trunk connection process with the exchange;

a switching part for performing a traffic channel connection between the specialized resource part and the originating subscriber based on control data; and

a specialized resource management part for controlling the call process with the exchange, for confirming the customized information to be supplied to the originating

subscriber based on the originating subscriber's information applied from the exchange, interconnecting with the information service control/management subsystem, for controlling the specialized resource part and the switching part based on the confirmed result to supply the customized information to the originating subscriber.

45. The system for providing customized information during call setup process in telecommunication system as recited in claim 44, wherein the customized information apparatus included in the specialized resource part is downloaded from the information service control/management subsystem.

46. The system for providing customized information during call setup process in telecommunication system as recited in claim 44, wherein the specialized resource part further includes an audible tone detecting means for detecting audible information, and the specialized resource management part couples the audible tone detecting means with a called party during the information provision service, and connects the originating subscriber with the called party if an audible tone is detected by the audible tone detecting means.

47. A system for providing customized information during call setup process in telecommunication system comprising:

a subscriber's information storing means for storing subscribers' information and data indicating whether an originating caller is an information service subscriber or not;

an exchange, composed in a switching network, for executing a call connection process between a caller and a called party, for routing the corresponding call to an information provision apparatus if the caller is an information service subscriber, and connects the caller to a called party when the called party answers to the call; and

an information provision apparatus for providing predetermined customized information to the originating subscriber connected through the exchange.

48. The system for providing customized information during call setup process in telecommunication system as recited in claim 47, wherein the exchange forwards an initial address message to the information provision apparatus when executing the call connection process, and the initial address message includes at least one among an originating number, a terminating number and an originating subscriber's location

information.

49. The system for providing customized information during call setup process in telecommunication system as recited in claim 48, wherein the originating subscriber's information is transmitted through a UUI parameter.

50. The system for providing customized information during call setup process in telecommunication system as recited in claim 48, wherein the information provision system sends an address complete message against the initial address message transmitted from the exchange, the address complete message including predetermined timing data, and the exchange delays the terminating call process for the corresponding timing data.

51. The system for providing customized information during call setup process in telecommunication system as recited in claim 47, wherein the exchange transmits a call release message to the information provision apparatus when the called party answers to the call, and the information provision apparatus suspends the information provision service according to the call release message.

52. The system for providing customized information during call setup process in telecommunication system as recited in claim 47, wherein the information provision apparatus supplies a call release message when the information provision service is unavailable,

the exchange connects the originating subscriber with the called party when the call release message is received from the information provision apparatus.

53. The system for providing customized information during call setup process in telecommunication system as recited in claim 50, wherein the delay time is set according to the kind of the customized information.

54. The system for providing customized information during call setup process in telecommunication system as recited in claim 50, wherein the delay time is set by a service subscriber.

55. The system for providing customized information during call setup process in telecommunication system as recited in claim 48, wherein the information provision apparatus supplies the customized information to the



originating subscriber based on at least one of the  
originating number and the originating subscriber's location  
information.

56. The system for providing customized information  
5 during call setup process in telecommunication system as  
recited in claim 47, wherein the information provision  
apparatus, connected with a short message service center, can  
transmit a short message.

57. The system for providing customized information  
10 during call setup process in telecommunication system as  
recited in claim 56, wherein the short message is an access  
information with which the originating subscriber can obtain  
more detailed information corresponding to the customized  
information.

15 58. The system for providing customized information  
during call setup process in telecommunication system as  
recited in claim 57, wherein the access information is a  
telephone number.

59. The system for providing customized information

during call setup process in telecommunication system as recited in claim 57, wherein the access information is a URL information.

5       60. The system for providing customized information during call setup process in telecommunication system as recited in claim 57, wherein the access information is supplied if the information provision service has been executed successfully.

10       61. The system for providing customized information during call setup process in telecommunication system as recited in claim 47, wherein the information provision apparatus can be connected with the Internet.

15       62. The system for providing customized information during call setup process in telecommunication system as recited in claim 61, wherein an originating subscriber selects a kind of the customized information on the Internet.

63. The system for providing customized information during call setup process in telecommunication system as recited in claim 47, wherein the exchange delays the call

process for the originating subscriber for a predetermined time.

64. The system for providing customized information during call setup process in telecommunication system as recited in claim 47, wherein the information provision apparatus includes:

an information service process subsystem, interconnected with the exchange through trunk lines, for executing a call routing process and a call connection process, for transmitting a service setup request message having at least an originating number based on an initial address message applied from the exchange to an information service control/management subsystem, and for providing the customized information to the originating subscriber based on a service setup response message output from the information service control/management subsystem; and

an information service control/management subsystem, including a database for storing subscribers' information and service information, for transmitting the service setup response message including at least an information ID against the information setup request message to the information service process subsystem.

65. The system for providing customized information during call setup process in telecommunication system as recited in claim 64, wherein the service setup request message includes an originating subscriber's location information, and  
5 the information service control/management subsystem generates an information ID based on at least one of the originating number and the originating subscriber's location number.

66. The system for providing customized information during call setup process in telecommunication system as  
10 recited in claim 64, wherein the information service process subsystem transmits a service provision report message, indicating a result of providing the service, to the information service control/management subsystem.

67. The system for providing customized information  
15 during call setup process in telecommunication system as recited in claim 66, wherein the information service control/management subsystem takes statistics on executed information provision services.

68. The system for providing customized information  
20 during call setup process in telecommunication system as

recited in claim 64, wherein the information control/management subsystem is coupled to a short message service center and transmits a short message.

69. The system for providing customized information  
5 during call setup process in telecommunication system as recited in claim 66 or 68, wherein the short message is transmitted based on the service provision report message.

70. The system for providing customized information during call setup process in telecommunication system as  
10 recited in claim 64, wherein the information provision apparatus further includes a web server capable of connecting to the Internet, the web server supplying an access function for accessing to the database.

71. The system for providing customized information  
15 during call setup process in telecommunication system as recited in claim 64, wherein the service setup response message includes a predetermined timing data, the information service process subsystem generating an address complete message including the timing data to send it to the exchange.

72. The system for providing customized information during call setup process in telecommunication system as recited in claim 64, wherein the information service process subsystem comprises:

5 a specialized resource part, including predetermined customized information to be supplied to the originating subscriber, for outputting the corresponding customized information through a predetermined traffic channel;

10 a specialized resource signaling part for executing a trunk connection process with the exchange;

a switching part for performing a traffic channel connection between the specialized resource part and the originating subscriber based on control data; and

15 a specialized resource management part for controlling the call process with the exchange, for confirming the customized information to be supplied to the originating subscriber based on the originating subscriber's information applied from the exchange, interconnecting with the information service control/management subsystem, for  
20 controlling the specialized resource part and the switching part based on the confirmed result to supply the customized information to the originating subscriber.

73. The system for providing customized information during call setup process in telecommunication system as recited in claim 72, wherein the customized information apparatus included in the specialized resource part is  
5 downloaded from the information service control/management subsystem.

74. The system for providing customized information during call setup process in telecommunication system as recited in claim 64, wherein the specialized resource part  
10 further includes an audible tone detecting means for detecting audible information, the specialized resource management part couples the audible tone detecting means with the called party during the information provision service, and connects the  
15 originating subscriber with the called party if an audible tone is detected by the audible tone detecting means.

75. A system for providing customized information during a call setup process in a telecommunication system comprising:  
an exchange, composed in a switching network, for  
executing a call process between a caller and a called party,  
20 for routing the corresponding call to an information provision apparatus if a call request includes a predetermined

discrimination number against a terminating number; and

an information provision apparatus, including a path control function for routing the originating call to a called party, for supplying a predetermined provision service to the originating subscriber of the call routed by the exchange, and for connecting the originating subscriber to the called party when the call is answered by the called party .

76. A system for providing customized information during a call setup process in a telecommunication system comprising:

an exchange, composed in a switching network, for executing a call process between a caller and a called party, for routing the corresponding call to an information provision apparatus if a call request includes a predetermined discrimination number against a terminating number, and for connecting the originating subscriber to a called party if an answer is received from the called party; and

an information provision apparatus for providing predetermined customized information to the originating subscriber connected through the exchange.

77. A system for providing customized information during a call setup process in a telecommunication system including:



a home location register for providing predetermined call routing information about information provision service subscribers;

a visitor location register for storing subscribers' information whether an originating call for each subscriber is one that needs to be referred to the home location register or not;

an exchange, composed in a switching network, for executing a call control process, for referring to the visitor location register against the originating call from the subscriber, and for performing a call routing process to the information provision service using the routing information from the home location register if the caller is one that needs to be referred to the home location register; and

an information provision apparatus, including a path control function for routing the call of the originating subscriber to the called party, for providing predetermined customized information to the originating subscriber of the call routed by the exchange, and for connecting the originating subscriber to the called party when the call is answered by the called party.

78. A system for providing customized information

during a call setup process in telecommunication system comprising:

a home location register for providing predetermined call routing information about the subscribers;

5 a visitor location register for storing subscribers' information whether an originating call for each subscriber is one that needs to be referred to the home location register or not;

10 an exchange, composed in a switching network, for executing a call control process, for referring the visitor location register against the originating call, for performing a call routing process to the information provision apparatus using the routing information of the home location register if the caller is one that needs to be referred to the home  
15 location register, for executing a path control process based upon a called number, and for connecting the originating subscriber to the called party when the called party answers to the call; and

20 an information provision apparatus for providing predetermined customized information to the originating subscriber through the exchange.

79. A system for providing customized information

during a call setup process in a telecommunication system comprising:

a first exchange having a path control function;

a second exchange having no path control function; and

5 an information provision apparatus, interconnected with both the first and second exchanges through trunks, including the selective path control function, for providing predetermined customized information to the originating subscriber of the call routed by the exchange, the information  
10 provision apparatus executing the path control process for the call from the second exchange.

80. The system for providing customized information during call setup process in telecommunication system as  
15 recited in claim 79, wherein the selective terminating call process is executed based on information of the trunk lines connected with the exchanges.

81. A system for providing customized information during a call setup process in a telecommunication system  
20 comprising:

an exchange, composed in a switching network, having a database for storing subscribers' information indicating

whether an originating caller is an information service subscriber or not, for executing a call control process, and for routing the corresponding call to an intelligent network if the caller is the information service subscriber; and

5           an intelligent network including a service switching part for performing the information provision service, an intelligent peripheral for storing a plurality of customized information to be provided to the subscribers, and a service switching part for performing a switching process for the call  
10       from the exchange,

          the service switching part transmitting a message including at least a calling party's number to the service control part,

          the service control part controlling the service  
15       switching part to connect the call to the intelligent peripheral and controlling the intelligent peripheral to output predetermined customized information, and

          the service switching part connecting the originating subscriber to the called party when the called party answers  
20       to the call.

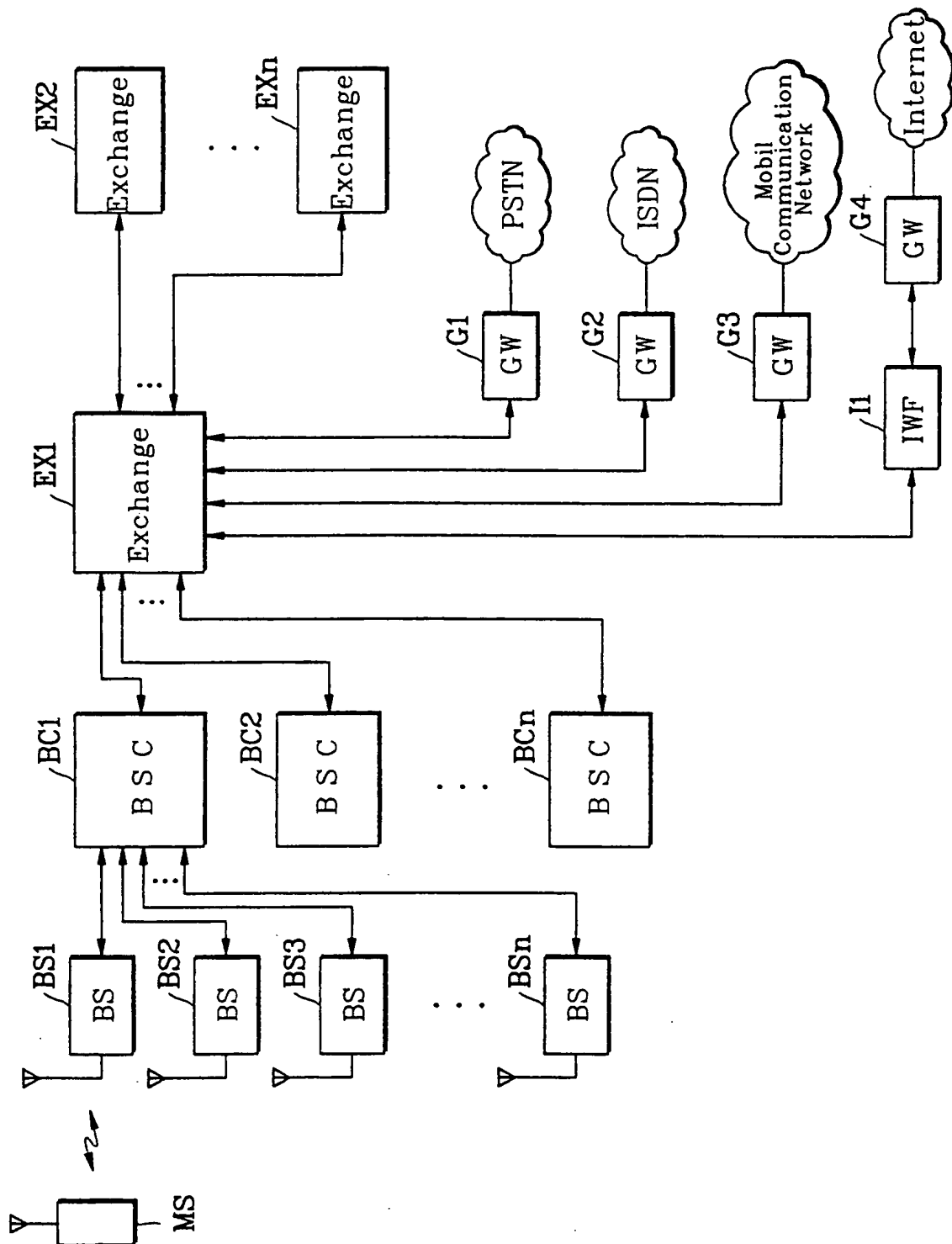
Fig. 1  
1/11

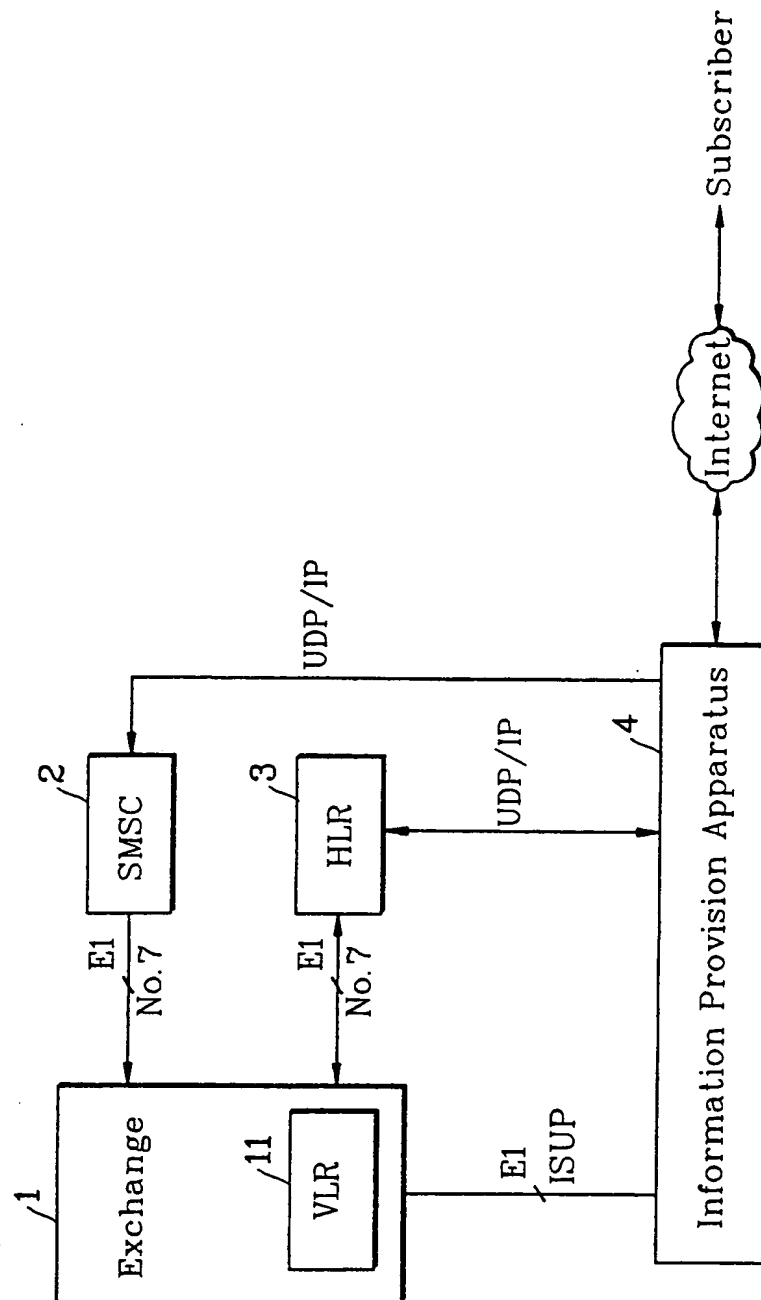
Fig. 2  
2/11

Fig. 3

3/11

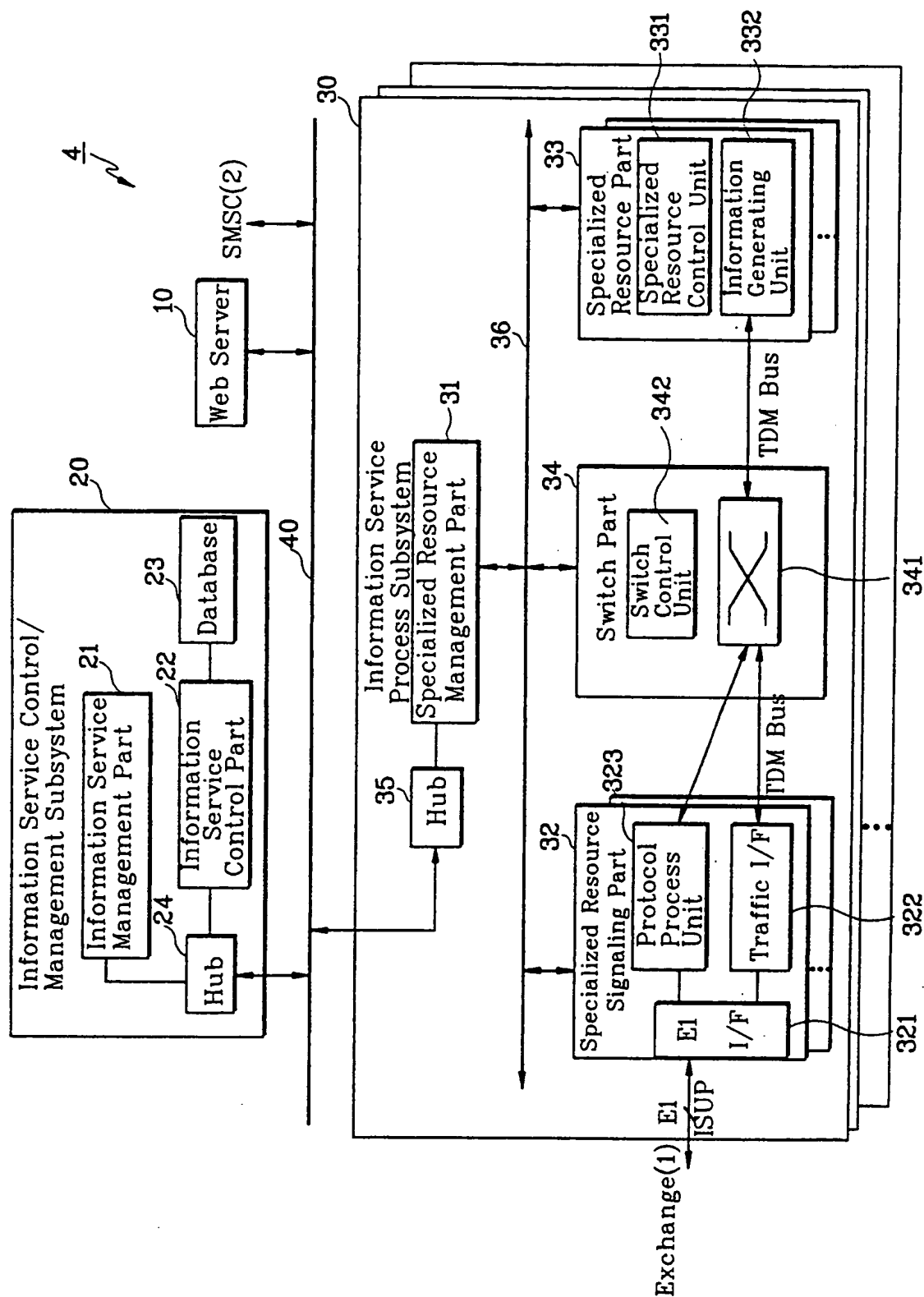


Fig. 4  
4/11

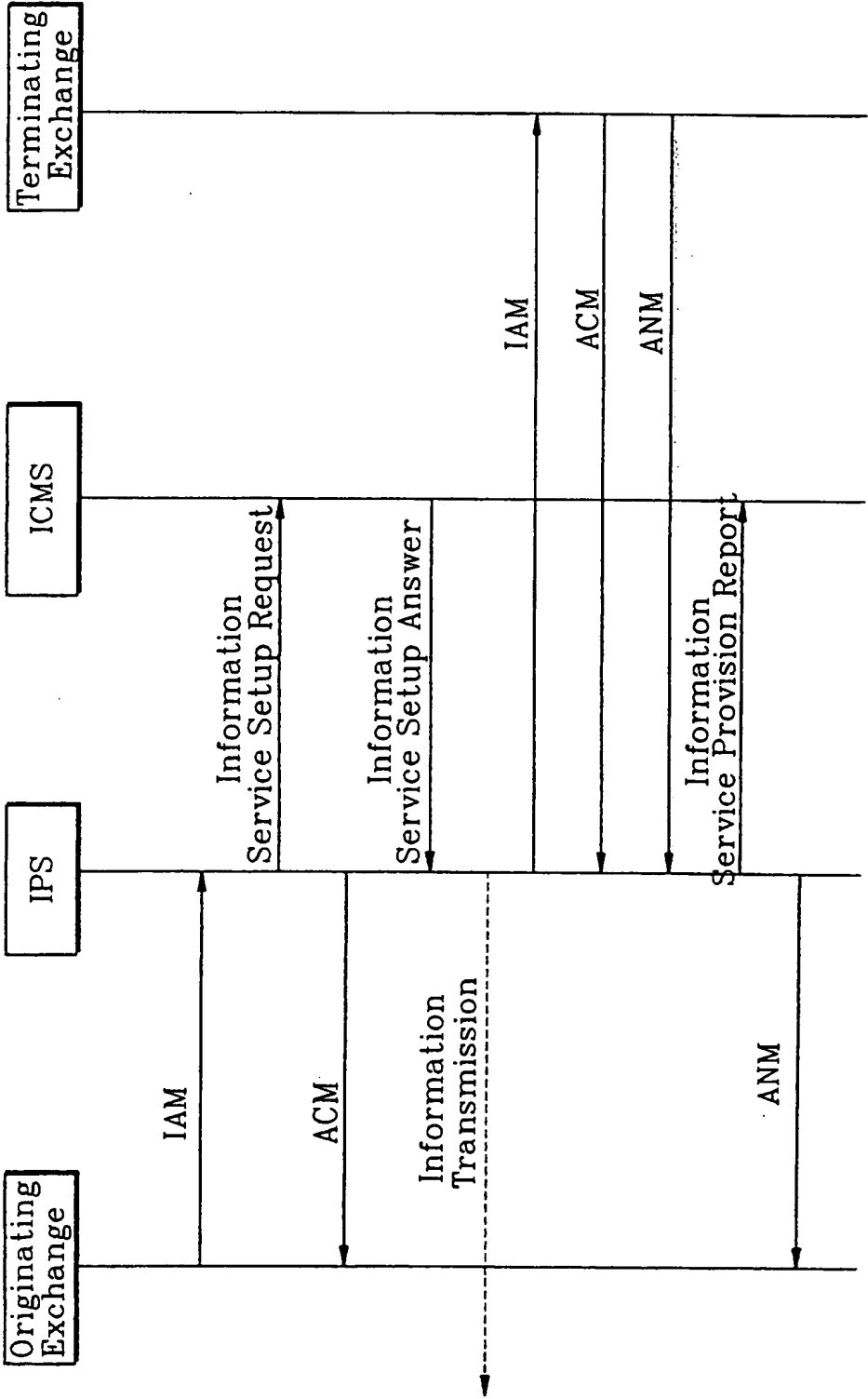




Fig. 5  
5/11

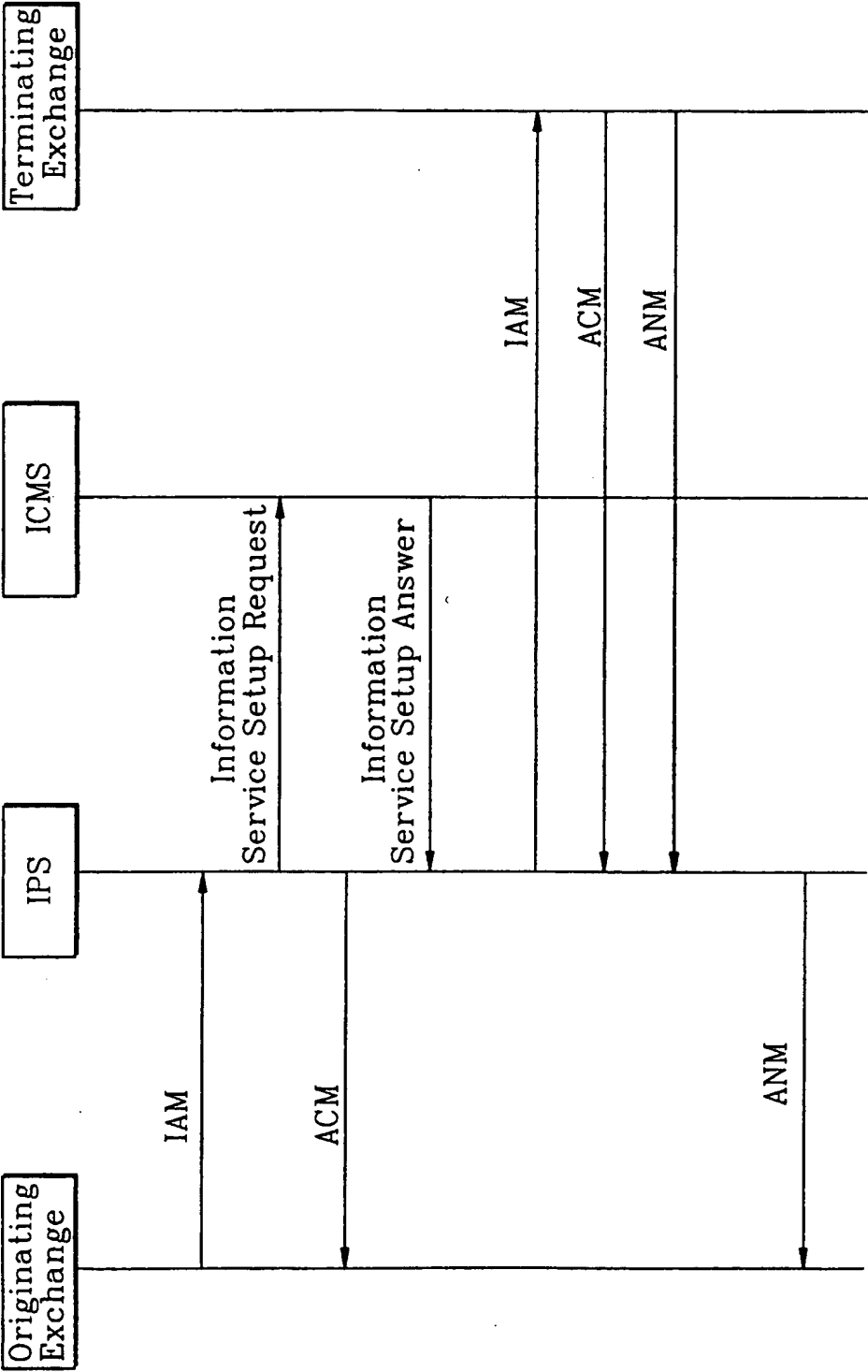


Fig.6  
6/11

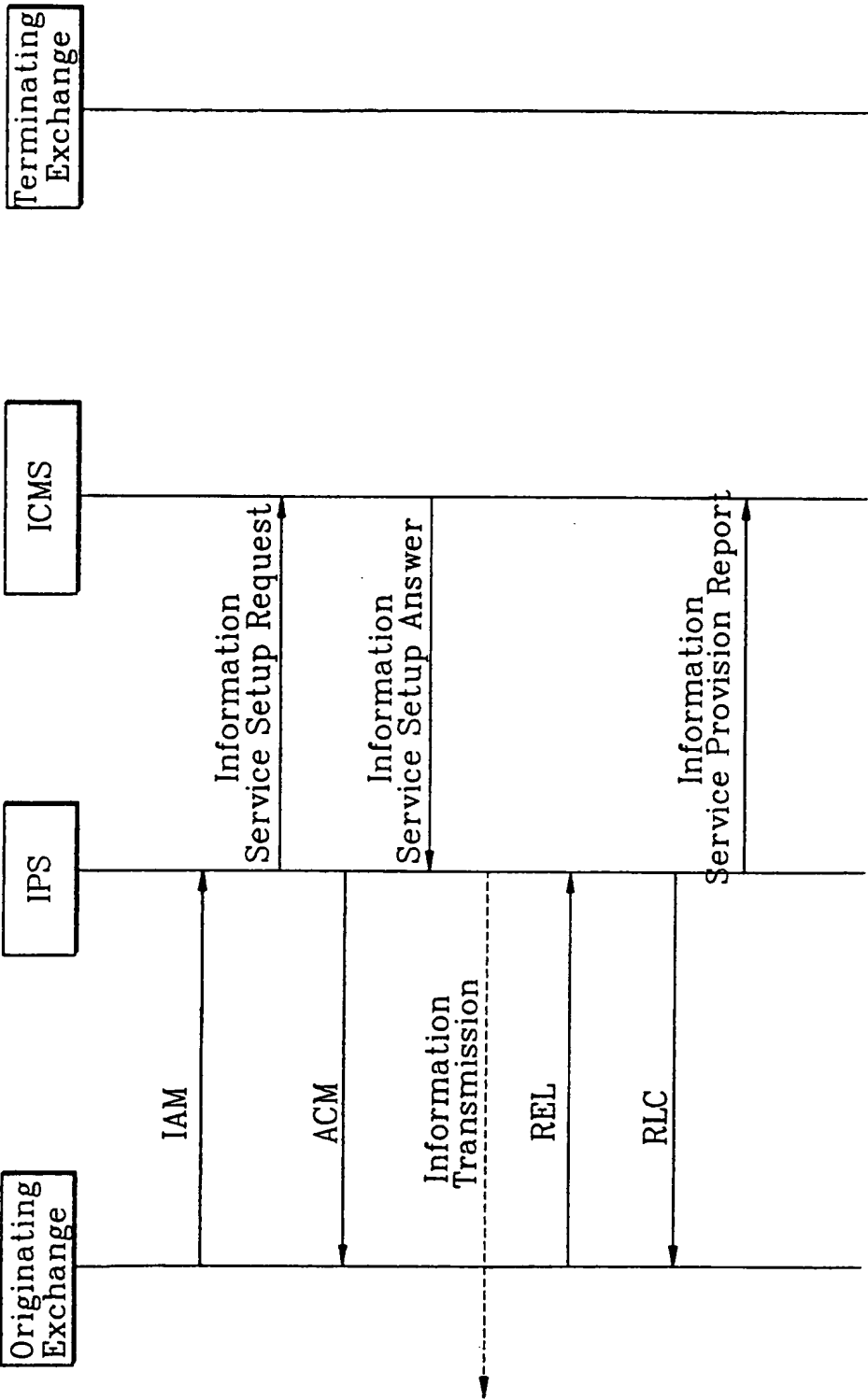


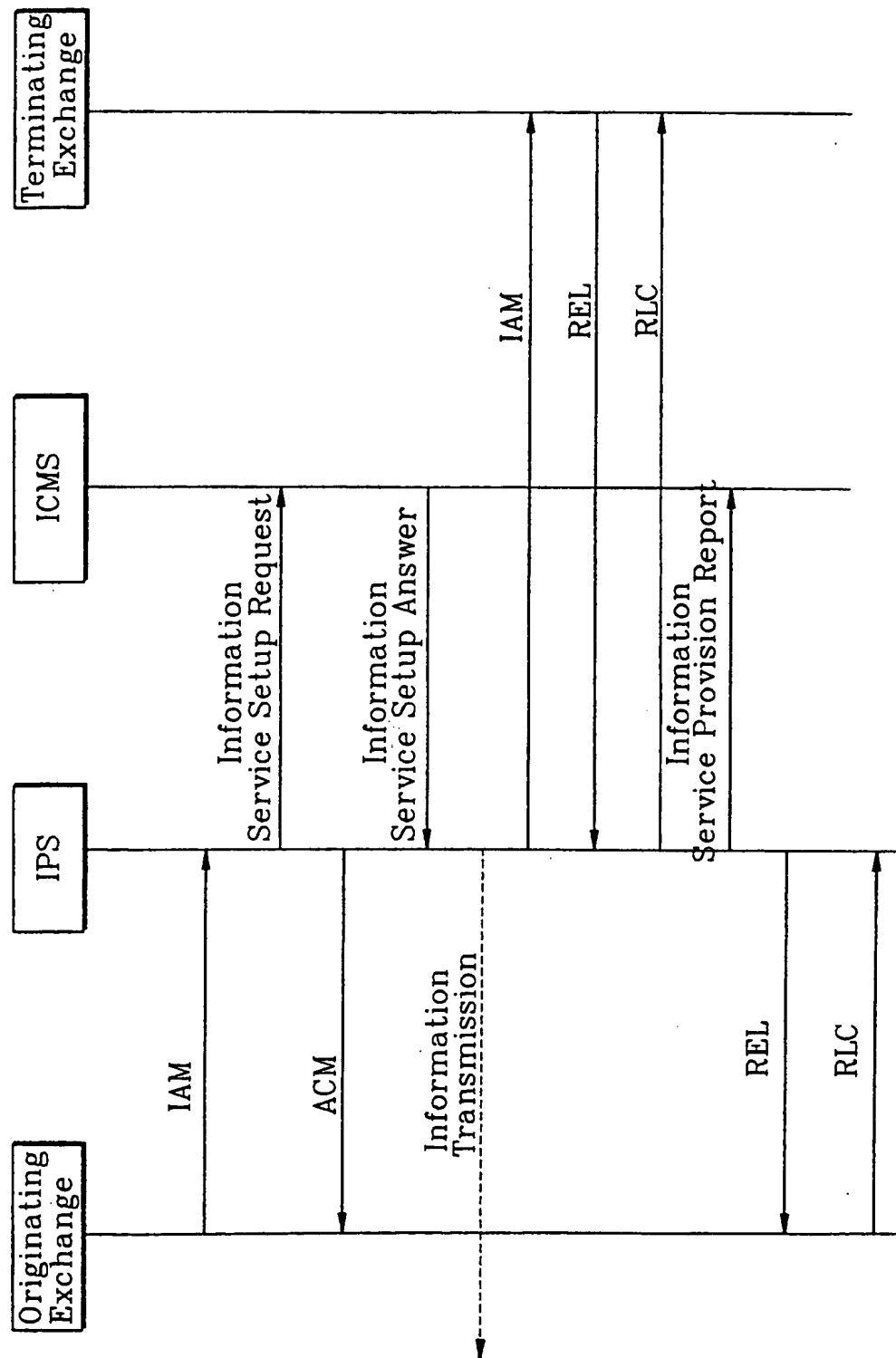
Fig. 7  
7/11

Fig. 8  
8/11

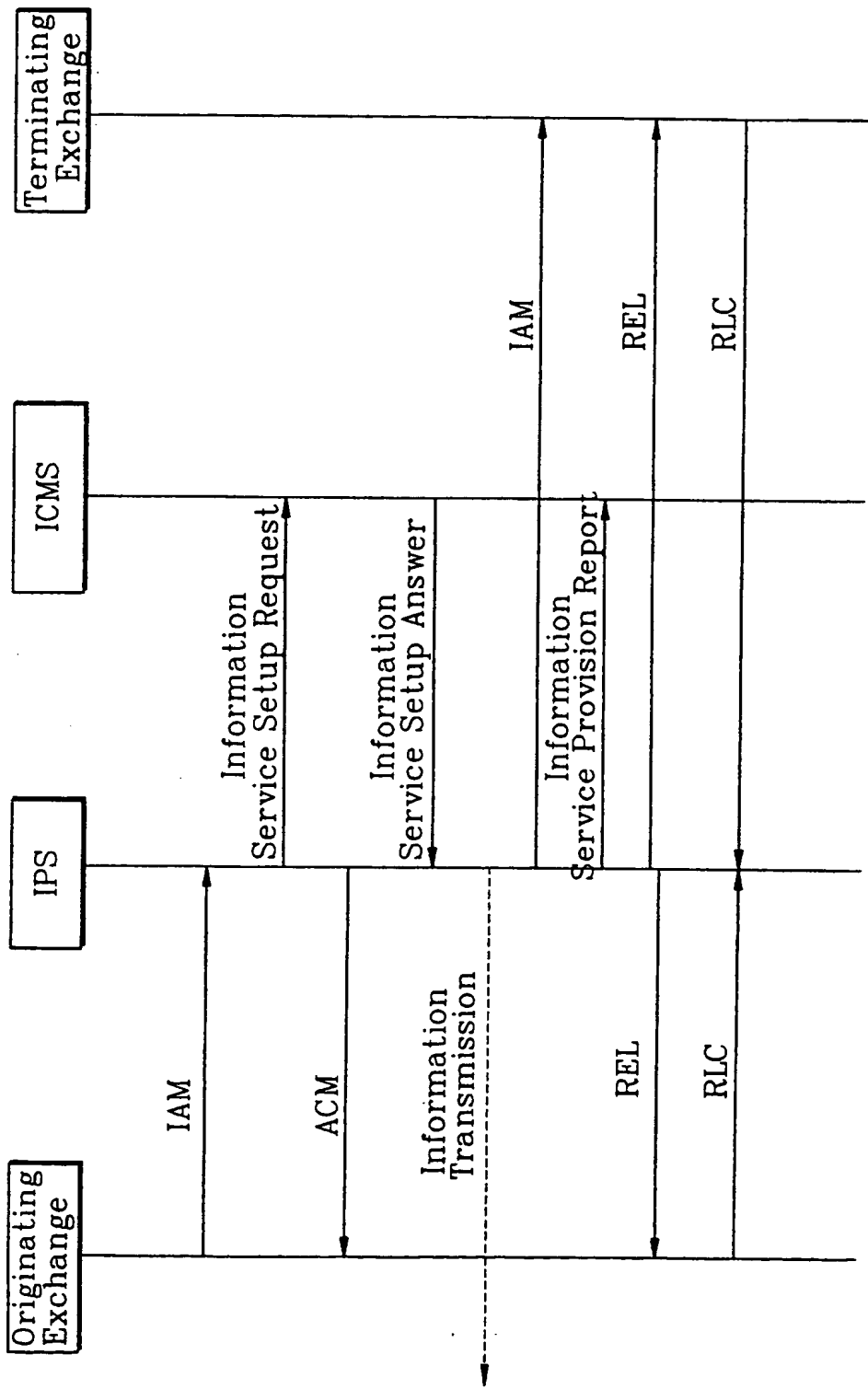


Fig. 9  
9/11

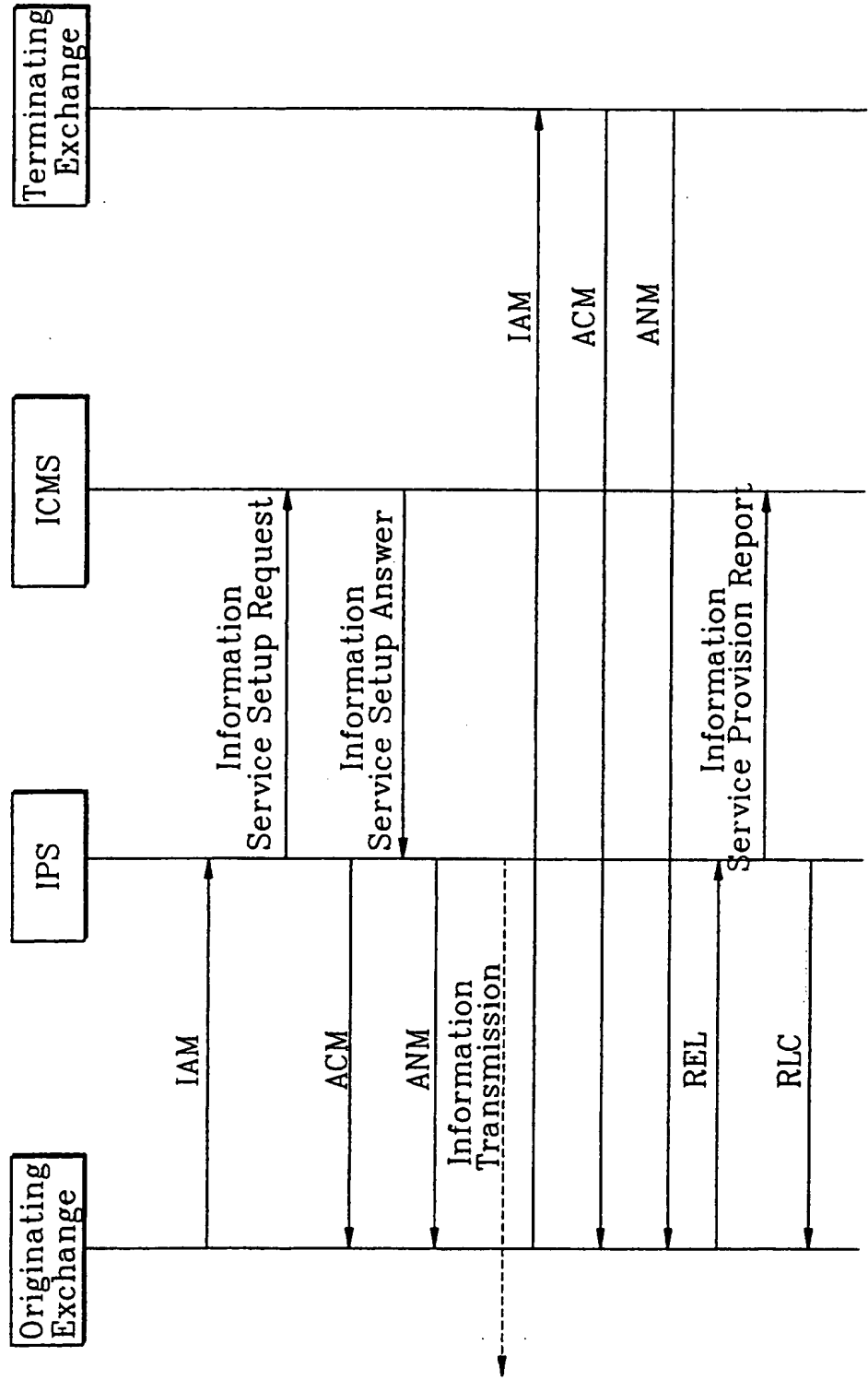


Fig.10

10/11

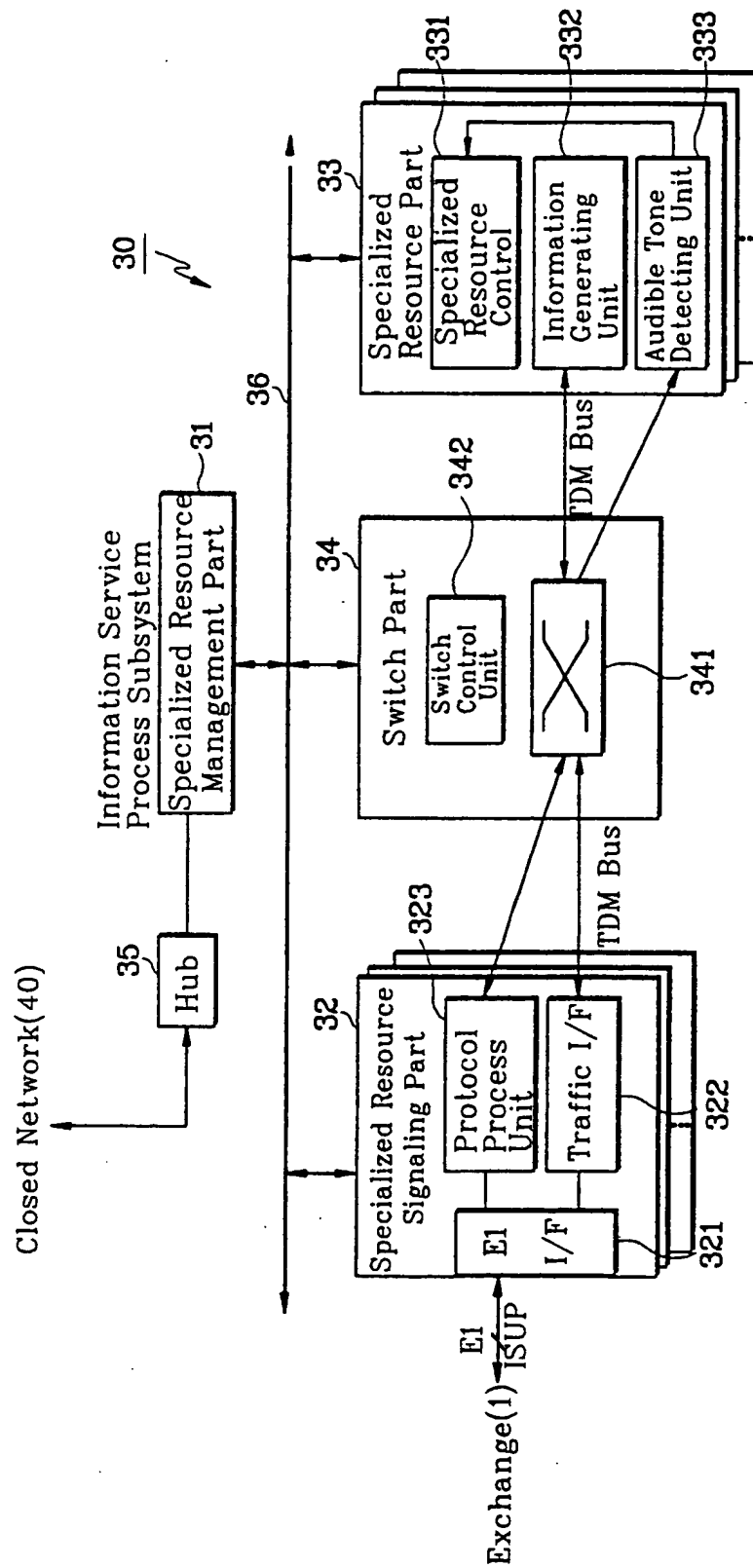
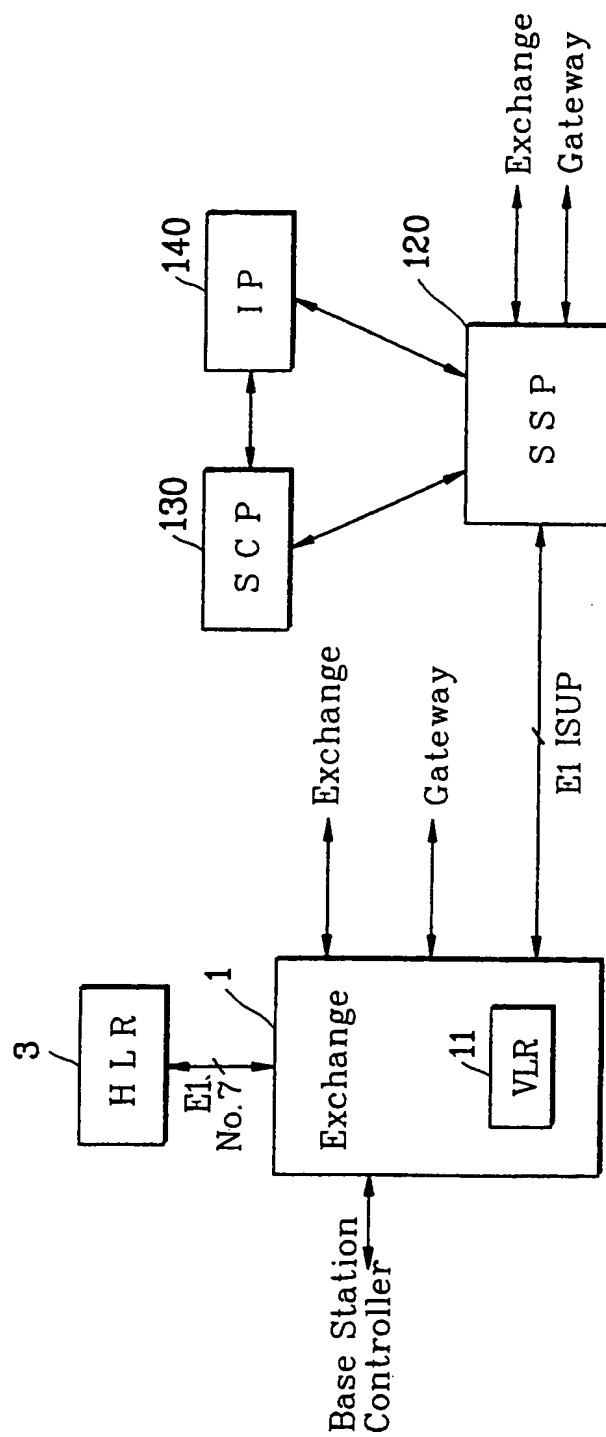


Fig. 11  
11/11

## INTERNATIONAL SEARCH REPORT

International application No

PCT/KR00/00770

**A CLASSIFICATION OF SUBJECT MATTER****IPC7 H04B 7/26**

According to International Patent Classification (IPC) or to both national classification and IPC

**B FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC7 H04B 7/26, H04Q 7/22, H04Q7/24, H04Q 7/38, H04M 11/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Patents and applications for inventions since 1975

Korean Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
A	KR 99-42254 A (LG electronic Corp ) 16 June 1999 See the abstract	1-2,21-22,43,75-79,81
A	EP 725550 A (Paradyne Corp ) 03 December 1997 See the abstract	1-2,21-22,43,75-79,81
A	US 5351582 A (AT&T Corp ) 06 December 1994 See the abstract	1-2,21-22,43,75-79,81

☐ Further documents are listed in the continuation of Box C☒ See patent family annex

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search

02 NOVEMBER 2000 (02 11 2000)

Date of mailing of the international search report

08 NOVEMBER 2000 (08 11 2000)

Name and mailing address of the ISA/KR

Korean Industrial Property Office  
Government Complex-Taejon, Dunsan-dong, So-ku, Taejon  
Metropolitan City 302-701, Republic of Korea

Facsimile No 82-42-472-7140

Authorized officer

YOON, Byoung Soo

Telephone No 82-42-481-5709





**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

PCT/KR00/00770

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 99-42254 A	16. 06. 1999	-	-
EP 725550 A	03. 12. 1997	US 6055443 A	25. 04. 2000
		US 5787364 A	28. 07. 1998
		JP 8322088 A	03. 12. 1996
		CN 1134648 A	30. 10. 1996
		CA 2167336 A	31. 07. 1996
US 5351582 A	06. 12. 1994	-	-